

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXXIX. NEW YORK, SATURDAY, OCTOBER 19, 1901.

No. 16.

SPECIAL ARTICLES.

THE CASE OF PRESIDENT MCKINLEY.

THE following report has received the approval of, and is issued by, the undersigned, the medical staff attending the late President, William McKinley.

P. M. RIXEY.
MATTHEW D. MANN.
HERMAN MYNTER.
ROSWELL PARK.
EUGENE WASDIN.
CHARLES MCBURNEY.
CHARLES G. STOCKTON.

October 12, 1901.

SURGICAL HISTORY.

President William McKinley was shot, by Leon F. Czolgosz, in the Temple of Music, at the Pan-American Exposition, Buffalo, N. Y., at about 7 minutes past 4 on the afternoon of Friday, September 6, 1901. Two shots were fired. One bullet struck near the upper part of the sternum, and the other in the left hypochondriac region. The President was immediately conveyed to the Emergency Hospital on the Exposition grounds by the motor ambulance, where he arrived at 4.18. Dr. G. McK. Hall and Mr. Edward C. Mann, medical student, of the house staff, were in charge of the ambulance, Medical Student T. F. Ellis being the driver.

On arriving at the hospital, President McKinley was at once placed upon the table in the operating room and undressed. During the removal of his clothing a bullet fell out and was picked up by Mr. Ellis. Dr. Hall placed a temporary antiseptic dressing over the wounds, and Mr. Mann ordered a nurse to administer 0.01 gm. of morphin and 0.002 gm. of strychnin hypodermically.

Dr. Herman Mynter, who had been telephoned from police headquarters to report immediately at the Exposition hospital, was the first surgeon to arrive, at 4.45 o'clock. At that time Drs. P. W. Van Peyma and Joseph Fowler, of Buffalo, and Dr. Edward Wallace Lee, of St. Louis, were present. Dr. Mynter brought with him Dr. Eugene Wasdin, of the United States Marine-Hospital Service.

Dr. Mynter inspected the President's wounds, and immediately saw their serious nature. He told the President that it would be necessary to operate, and at once set about making preparations, aided by the house staff and nurses and Dr. Nelson W. Wilson, Sanitary Officer of the Exposition, who at that time assumed charge of the hospital in the absence of Dr. Roswell Park, the Medical Director of the Exposition. The President's pulse on the arrival of Dr. Mynter was 84; he had no particular pain in the abdomen, and no apparent loss of liver dulness. He was evidently slightly under the influence of the morphin.

Dr. Matthew D. Mann arrived at the hospital at 5.10 p. m., having been telephoned for by Mr. John C. Milburn. He was followed, 5 minutes later, by Dr. John Parmenter.

An examination was at once made, followed by a short consultation between Drs. Mann, Mynter and Wasdin, which resulted in the decision to operate at once. The necessity for the operation was explained to President McKinley, and he gave his full consent. Immediate operation was decided upon because of the danger of possible continued internal hemorrhage and of the escape of gastric or intestinal contents into the peritoneal cavity, and because the President's pulse was getting weaker. Moreover, the daylight was rapidly failing. Dr. Roswell Park, who, by virtue of his office,

had he been present would have performed the operation, was at Niagara Falls, and although a special train had been sent for him, it was uncertain when he would arrive.

Dr. Mann was selected to do the operation, with Dr. Mynter as his associate, by the common consent of the physicians present and at the request of Mr. Milburn, president of the Pan-American Exposition, who stated that he had been requested by President McKinley to select his medical attendants. Dr. Mann selected Drs. Lee and Parmenter as assistants.

At 5.20 Dr. Mann directed the administration of ether to President McKinley, and requested Dr. Wasdin to administer it. Ether was chosen as being, on the whole, the safer anesthetic. While the anesthetic was being given the surgeons who were to take part in the operation prepared their hands and arms by thoroughly scrubbing with soap and water and immersing them in a solution of mercuric chlorid.

The operation began at 5.20. Dr. Mann stood upon the right-hand side of the patient, with Dr. Parmenter on his right-hand side. Dr. Mynter stood upon the left-hand side of the patient, and on his right was Dr. Lee. To Drs. Parmenter and Lee were assigned the duties of sponging and the care of the instruments. Dr. P. M. Rixey, U. S. N., President McKinley's family physician, having been detailed by the President to accompany Mrs. McKinley to the Milburn home, did not arrive until 5.30, when he gave very efficient service by guiding the rays of the sun to the seat of the operation by aid of a hand-mirror, and later by arranging an electric light. Dr. Roswell Park arrived just as the operation on the stomach was completed, and gave his aid as consultant. Mr. E. C. Mann had charge of the needles, sutures and ligatures. Mr. Simpson, medical student, was at the instrument tray.

The nurses, under the charge of Miss A. C. Walters, superintendent of the hospital, were Miss M. E. Morris and Miss A. D. Barnes, with hands sterilized; Miss Rose Baron, Miss M. A. Shannon and Miss L. C. Dorchester, assistants, and Miss Katharine Simmons attending the anesthetizer.

Besides those immediately engaged in the operation, there were present Drs. P. W. Van Peyma, Joseph Fowler, D. W. Harrington and Charles G. Stockton, of Buffalo, and Dr. W. D. Storer, of Chicago.

THE OPERATION.

President McKinley took the ether well, and was entirely under its influence in 9 minutes after the beginning of the anesthetization. The abdomen was carefully shaved and scrubbed with green soap, and then washed with alcohol and ether and the bichlorid solution.

Inspection showed 2 wounds made by the bullets. The upper one was between the second and third ribs, a little to the right of the sternum. The use of a probe showed that the skin had not been penetrated, but that the bullet had probably struck a button or some object in the clothing which had deflected it. The lower wound made by the other bullet—a 32 caliber—was on a line drawn from the nipple to the umbilicus. It was about half-way between these points, and about 5 cm. to the left of the median line. A probe showed that this wound extended deeply into the abdominal walls, and that the direction was somewhat downward and outward.

An incision was made from the edge of the ribs downward, passing through the bullet wound and nearly parallel with the long axis of the body. A deep layer of fat was opened, and followed by incision of the fascia and muscles to the peritoneum. After cutting through the skin, a piece of cloth, undoubtedly a bit of the

President's clothing, was removed from the track of the bullet, a short distance below the skin.

On opening the peritoneum, the finger was introduced and the anterior wall of the stomach palpated. An opening was discovered which would not quite admit the index finger. This opening was located near the greater curvature of the stomach, and about 2 cm. from the attachment of the omentum; its edges were clean-cut and did not appear to be much injured.

The stomach was drawn up into the operation wound, and the perforation very slightly enlarged. The finger was then introduced and the contents of the stomach palpated. This was done to see if the stomach contained food, and also with the hope that possibly the bullet might be in the stomach. The stomach was found to be half-full of liquid food, but no evidence of the ball was discovered. In pulling up the stomach a small amount of liquid contents escaped, together with a good deal of gas. The tissues around the wound were carefully irrigated with hot salt solution and dried with gauze pads. The perforation in the anterior stomach wall was then closed with a double row of silk suture (Czerny-Lembert). The sutures were not interrupted with each stitch, but 4 stitches were introduced before the ends were tied. The loop was then cut off and the suture continued. About 8 stitches were used in each row. The silk used was fine black silk, the needle being a straight, round sewing needle.

In order to examine the posterior wall of the stomach, it was necessary to enlarge the incision, which now reached about 15 cm. in length. The omentum and transverse colon were pulled well out of the abdomen. The omentum was enormously thickened with fat and very rigid. In order to reach the back wall of the stomach, it was necessary to divide about 4 inches of the gastrocolic omentum, the cut ends being tied with strong black silk in 2 masses on each side. In this way the stomach could be drawn up in the operation wound, and the bullet wound in its posterior wall reached. This opening was somewhat larger than that in the anterior wall of the stomach, and had frayed and blood-infiltrated edges. Its exact location was impossible to determine, but it appeared to be near the larger curvature.

This opening was closed in the same way as the anterior wound, but with great difficulty, as the opening was down at the bottom of a deep pocket. A short curved surgical needle was necessary here. Little or no gastric contents appeared around this opening, but after it had been closed the parts were carefully irrigated with hot salt solution.

The operation on the stomach being now finished, Dr. Mann introduced his arm so as to palpate carefully all the deep structures behind the stomach. No trace of the bullet or of the further track of the bullet could be found. As the introduction of the hand in this way seemed to have a bad influence on the President's pulse, prolonged search for further injury done by the bullet or for the bullet itself was desisted from. The folds of the intestine which had been below the stomach were inspected for injury, but none was found. The entire gut was not removed from the abdomen for inspection, as the location of the wound seemed to exclude its injury. To have made a satisfactory search for wounds in the President's back, it would have been necessary to have entirely eviscerated him. As he was already suffering from shock, this was not considered justifiable, and might have caused his death on the operating table.

Before closing the abdominal wound, Dr. Mann asked each of the surgeons present, whether he was entirely satisfied that everything had been done which should be done, and whether he had any further suggestions to make. Each replied that he was satisfied. The question of drainage was also discussed. Dr. Mynter was in favor of a Mikulicz drain being placed down behind the stomach-wall. Dr. Mann, with the concurrence of the other surgeons, decided against this, as being unnecessary.

As the last step in the operation, the tissues around the bullet track in the abdominal wall were trimmed, in order to remove any tissue which might be infected. The abdominal wound was then closed with 7 through-

and-through silkwormgut sutures, drawn only moderately tight, the superior layer of the fascia of the rectus muscle being joined with buried catgut. The edges of the skin were brought together by fine catgut sutures. Where the bullet had entered there was slight gaping of the tissues, but it was not thought advisable to close this tightly, as it might allow of some drainage. The wound was then washed with hydrogen dioxide and covered with aristol powder and dressed with sterilized gauze and cotton, which were held in place with adhesive straps. Over all was put an abdominal bandage.

The President bore the operation very well. The time from the beginning of the administration of the anesthetic until its discontinuance was exactly an hour and 31 minutes; the operation was completed at 6.50 p. m., having lasted from the time of the first incision, an hour and 21 minutes. At the beginning of the operation President McKinley's pulse was 84. At 5.38, 0.002 gm. of strychnin was administered hypodermically. At 5.55 the respiration was 32 and the pulse 84—both good in character. At 6.09 the pulse was 88. At 6.20 it was 102, fair in character; respiration 39. At 6.22, 1.50 gm. of brandy was administered hypodermically. At 6.48 the pulse was 124, the tension good but quick; respiration 36. At 7.01, after the bandage was applied, the pulse was 122 and the respiration 32. At 7.17, 0.004 gm. of morphin was administered hypodermically.

At 7.32 the patient was removed from the hospital in the ambulance. Dr. Rixey asked Drs. Park and Wasdin to go in the ambulance, as his duty called him to go at once to inform Mrs. McKinley of her husband's condition and to prepare a room for his reception. Drs. Mann and Mynter, with friends of the President, followed in carriages immediately after. President McKinley had not then recovered from the anesthetic. He bore the journey to Mr. Milburn's house exceedingly well, but it was found necessary to give him a small hypodermic injection of morphin during the transit, as he was becoming very restless. On arrival at the house of Mr. Milburn, 1168 Delaware Avenue, he was removed from the ambulance on the stretcher, and carried to a room in the northwest corner of the house, where a hospital bed had been prepared for him.

REMARKS ON THE OPERATION.

BY MATTHEW D. MANN, M.D.

The difficulties of the operation were very great, owing partly to the want of retractors and to the failing light. The setting sun shone directly into the room, but not into the wound. The windows were low and covered with awnings. After Dr. Rixey aided us with a hand mirror, the light was better. Toward the end of the time a movable electric light with reflector was put in use. The greatest difficulty was the great size of President McKinley's abdomen and the amount of fat present. This necessitated working at the bottom of a deep hole, especially when suturing the posterior wall of the stomach.

The operation was rendered possible and greatly facilitated by a good operating table and the other appliances of a hospital, and by the presence of many trained nurses and assistants. Still, the hospital was only equipped for minor emergency work, and had but a moderate supply of instruments. Unfortunately, when called I was not told what I was wanted for, and went to the Exposition grounds entirely unprepared. Dr. Mynter had his large pocket case, the contents of which were of great use.

As has already been noted, further search for the bullet was rendered inadvisable by the President's condition. The autopsy shows that it could not have been found, and that the injuries inflicted by the bullet after it passed through the stomach, were of such a nature as to render impossible and unnecessary any further surgical procedure. A bullet after it ceases to move does little harm. We were often asked why, after the operation, we did not use the x-ray to find the bullet. There were several reasons for this. In the first place, there were, at no time any signs that the bullet was doing harm. To have used the x-ray simply to have satisfied

our curiosity would not have been warrantable, as it would have greatly disturbed and annoyed the patient, and would have subjected him also to a certain risk. Had there been signs of abscess-formation, then the rays could and would have been used.

My reason for not draining was that there was nothing to drain. There had been no bleeding nor oozing; there was nothing to make any discharge or secretion; the parts were presumably free from infection, and were carefully washed with salt solution. As there was no peritonitis and the abdomen was found post mortem to be sterile, we may safely conclude that no drainage could have been provided which would have accomplished anything. My experience teaches me never to drain unless there is a very decided indication for it, as a drain may do harm as well as good.

In conclusion, I wish to thank all the gentlemen who so kindly and skilfully assisted me. They were all surgeons of large experience in abdominal surgery, and their aid and advice were most valuable. Especially I wish to acknowledge my great obligation to my associate, Dr. Mynter. Not only was he an assistant, but he was much more, and helped me greatly by his skill and, as a consultant, with his good judgment and extensive knowledge of abdominal work. Although called first, he waived his claim, and generously placed the case in my hands, willingly assuming his share of the responsibility.

The anesthetic was most carefully administered by Dr. Wasdin, and the knowledge that he had charge of this very important duty relieved me of any anxiety on that score.

In the eventful week that followed the operation, Dr. Park and Dr. McBurney were towers of strength in helping to decide the many difficult questions which came up.

Dr. Rixey was in constant charge of the sick-room, aided later by Dr. Wasdin, who was detailed for this special duty. Both were unremitting in their care, and faithful to the end.

Dr. Stockton helped us in the last 3 days with the highest skill and best judgment.

Never, I am sure, under like circumstances, was there a more harmonious or better-agreed band of consultants. That our best endeavors failed was, I believe, no fault of ours; but it must be an ever-living and keen regret to each one of us, that we were not allowed the privilege of saving so noble a man, so attractive a patient, and so useful a life.

THE AFTER-TREATMENT.

When put to bed the President was in fair condition: Pulse, 127; temperature, 100.6°; respiration, 30. The nurses on duty were Miss K. R. Simmons and Miss A. D. Barnes, from the Emergency Hospital. Soon after his arrival, at 8.25, he was given morphin, 0.016 gm., hypodermically. There was slight nausea. The pulse soon improved. During the evening the patient slept at intervals, vomiting occasionally, but rallied satisfactorily. A slight discoloration of the dressings was noted at 10.45. There was occasional and slight pain. Ninety cc. of urine was voided, and an enema of salt solution given and retained.

SECOND DAY, SATURDAY, SEPTEMBER 7.

After midnight the patient slept a good deal; he was free from pain and quite comfortable.

At 6 a. m., the temperature was 102°; pulse, 110; respiration, 24.

Gas in large quantities was expelled from the bowels. A saline enema was given as before. Miss Simmons and Miss Barnes were replaced by Miss Maud Mohan and Miss Jane Connolly. Miss E. Hunt, of San Francisco, Cal., Mrs. McKinley's nurse, also rendered assistance, and Miss Grace Mackenzie, of Baltimore, Md., arrived September 9, and was detailed for regular duty. P. A. Eliot, J. Hodgins and Ernest Vollmeyer, of the U. S. A. Hospital Corps, were detailed as orderlies.

During the forenoon, 0.01 gm. of morphin was administered hypodermically.

At 1.15 p. m., a saline enema of 500 cc. was given. As the pulse was rising, 0.06 gm. of fluid extract of digitalis was injected hypodermically.

The President rested quietly until 6.30 p. m., when he complained of intense pain in the pit of the stomach, and was given 0.008 gm. of morphin sulphate hypodermically. He was very restless, but after being sponged rested again.

At 6.30 p. m., the pulse was 130; temperature, 102.5°; respiration, 29.

During the day the digitalis, morphin and saline enemas were kept up at regular intervals; 4 gm. of somatose was added to the water at 10.30 p. m. At 11.15 p. m. the President passed from the bowels 240 cc. of a greenish colored fluid and some particles of fecal matter.

The total amount of urine for 24 hours was 270 cc.

FIRST URINALYSIS, BY DR. H. G. MATZINGER.

Quantity.....30 cc.
Color.....dark amber
Reaction.....strongly acid
Urea.....0.028 gm. per 1 cc. of urine
Albumin.....a trace
Phosphates and chlorids.....normal
Sugar.....none
Indican.....very small amount

Microscopical Examination.—The sediment obtained by centrifuge shows a large amount of large and small epithelial cells with some leukocytes and occasional red cells. There is a comparatively large number of hyaline casts, principally small, with some finely granular ones; also an occasional fibrinous one. The amount of sediment is large for the quantity of urine submitted. There were no crystals in the sediment.

THIRD DAY, SUNDAY, SEPTEMBER 8.

During the early morning the President slept a good deal, but was restless, and at times confused and a little chilly. On the whole, he passed a fairly good night.

He expelled a little gas and brown fluid from the rectum. The digitalis was continued, and at 7.45 a. m., 0.002 gm. of strychnin were given hypodermically. At 8.20 a. m. he was clear and bright, with the pulse strong and of good character.

The wound was dressed at 8.30, and found in a very satisfactory condition. There was no indication of peritonitis. Pulse, 132; temperature, 102.8°; respiration, 24.

The dressing on the wound was changed because there was some exudation. The bullet track was syringed out with hydrogen dioxide. There was very little foaming, and there were no signs of pus.

At 10.40 a. m., following an enema of Epsom salts, glycerin and water, he had a small stool with gas, and another at noon. He was less restless and slept a good deal.

At noon Dr. Charles McBurney joined the medical staff in consultation.

Bulletin 14, 12 m.—The improvement in the President's condition has continued since the last bulletin. Pulse, 128; temperature, 101°; respiration, 27.

During the early morning the President slept 4 or 5 hours and his condition was satisfactory.

At 4.45 p. m., he was given a teaspoonful of water by the mouth; also an enema of sweet oil, soap and water. He passed slightly colored fluid with some little fecal matter and mucus. After this he had a small quantity of water by the mouth, and at 6.20 p. m. a nutritive enema of egg, whisky and water, which was partly retained. Digitalis and strychnin were both given during the evening.

At 9 p. m. the President was resting comfortably. The pulse was 130; temperature, 101.6°; respiration, 30.

Four hundred and twenty cc. of urine was passed during the day.

SECOND URINALYSIS.

Quantity.....450 cc.
Color.....amber, slightly turbid
Reaction.....strongly acid

Specific gravity..... 1.026
 Urea..... 0.038 gm. per 1 cc. of urine
 Albumin..... mere trace
 Sugar..... none
 Indican..... abundant
 Sulphates..... increased
 Phosphates..... somewhat increased
 Chlorids..... somewhat increased

Microscopical Examination.—Microscopic examination of sediment obtained by centrifuge shows fewer organic elements. Some large and small epithelial cells and some leukocytes. Casts are not so abundant as yesterday and are principally of the small finely granular variety. There is a marked diminution in small renal epithelial cells.

Quite a quantity of large crystals of uric acid and bacteria are present.

FOURTH DAY, MONDAY, SEPTEMBER 9.

The bulletins tell the story of the fourth day.
Bulletin 17, 6 a. m.—The President passed a somewhat restless night, sleeping fairly well. General con-

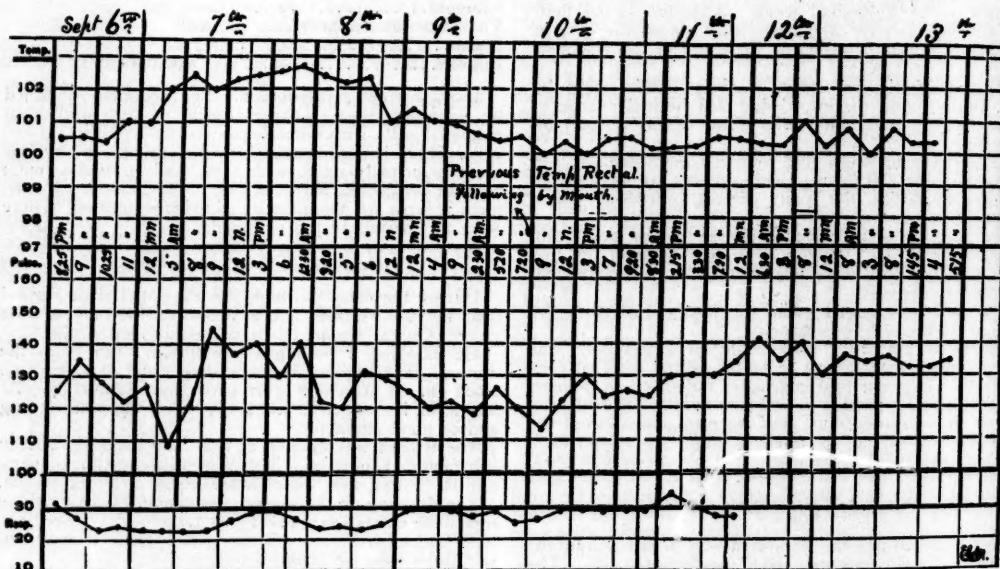
THIRD URINALYSIS.

Quantity received..... 540 cc.
 Color..... amber, slightly turbid
 Specific gravity..... 1.026
 Albumin..... a trace
 Indican..... not so abundant as yesterday
 Urea..... 0.047 gm. per cc. of urine
 Chlorids and phosphates... about normal
 Sulphate..... still somewhat high
 Sugar..... none

Microscopical Examination.—Microscopic examination of sediment obtained by centrifuge shows a decrease in the amount of organic elements and an increase of amorphous urates, but fewer crystals of uric acid. Casts are fewer and only the small granular and large hyaline varieties. The proportion of casts is greater. There are very few epithelial cells, mostly of renal type. A large number of cylindroids are found.

FIFTH DAY, TUESDAY, SEPTEMBER 10.

Soon after midnight the President had a high enema



dition unchanged. Pulse, 120; temperature, 101°; respiration, 28.

Bulletin 18, 9.20 a. m.—The President's condition is becoming more and more satisfactory. Untoward incidents are less likely to occur. Pulse, 122; temperature, 100.8°; respiration, 28.

Bulletin 19, 3 p. m.—The President's condition steadily improves and he is comfortable, without pain or unfavorable symptoms. Bowel and kidney functions normally performed. Pulse, 113; temperature, 101°; respiration, 26.

Bulletin 20, 9.30 p. m.—The President's condition continues favorable. Pulse, 112; temperature, 101°; respiration, 27.

Codeia was substituted for morphia, as the pain was less. Digitalis and strychnin were stopped. Nutritive enemata were given at 3.20 a. m., at 4.30 and 10 p. m. Hot water was taken quite freely by the mouth.

Attempts to get a good movement of the bowels were successful at noon, when he had a large light-brown partly-formed stool. This followed a small dose of calomel and a high enema of oxgall.

On the whole, the President's condition improved steadily during the day. He slept a good deal and was fairly comfortable. There was no pain on pressure over the abdomen.

of soap and water, which was expelled, together, with some fecal matter. He took hot water frequently, and slept a good deal.

Bulletin 21, 5.20 a. m.—The President has passed the most comfortable night since the attempt on his life. Pulse, 118; temperature, 100.4°; respiration, 28.

On awakening he felt very comfortable, and his mind was clear and cheerful. The nutritive enemata were kept up, and water given by the mouth. Had 2 small stools during the day. The only medicine given was one hypodermic of codeia phosphate, 0.015 gm.

In the evening the dressings were examined, and as there was considerable staining from the discharge, it was thought best to remove 4 stitches and separate the edges of the wound. A little slough was observed near the bullet track, covering a space nearly an inch wide, the thickness of the flaps. The separation seemed to extend down to the muscle. The surfaces, except those mentioned, looked healthy, but not granulating. It was supposed that the infection of the wound occurred either from the bullet or from the piece of clothing carried into the wound at the time of the shooting. The parts were thoroughly washed with hydrogen dioxide and packed lightly with gauze, and held together with adhesive straps.

SIXTH DAY, WEDNESDAY, SEPTEMBER 11.

Bulletin 26, 9 a. m.—The President rested comfortably during the night. Decided benefit has followed the dressing of the wound made last night. His stomach tolerates the beef juice well, and it is taken with great satisfaction. His condition this morning is excellent. Pulse, 116; temperature, 100.2°.

Bulletin 27, 3.30 p. m.—The President continues to gain, and the wound is becoming more healthy. The nourishment taken into the stomach is being gradually increased. Pulse, 120; temperature, 100.2°.

Bulletin 28, 10 p. m.—The President's condition continues favorable. Blood count corroborates clinical evidence of the absence of any blood poisoning. He is able to take more nourishment and relish it. Pulse, 120; temperature, 100.4°.

The blood count made by Dr. Wasdin in the evening was as follows:

Leukocytes	6,752.
Red cells	3,920,000.

A little after midnight, Wednesday morning, the patient was given 4 cc. of beef juice, the first food taken by the stomach. It seemed to be very acceptable. Nutritive enema was given at 2 a. m.; later there was a yellow stool.

From 4 to 8 cc. of beef juice was given every 1 to 2 hours during the day. The rectum was becoming irritable, and did not retain the nutritive enemas well.

At 10 a. m. the remaining stitches were removed, the wound separated and dressed. It seemed to be doing well. Most of the sloughing tissue had separated.

The patient slept much during the day, and expressed himself as feeling very comfortable. The only medicine administered was one hypodermic of strychnin.

In the evening he was changed to a fresh bed. Nutritive enemas were continued.

Urine was passed much more freely—750 cc. in 24 hours.

FOURTH URINALYSIS.

Quantity	82 cc.
Color	amber, clear
Specific gravity.....	1.027
Reaction	strongly acid
Albumin	a trace
Indican	abundant
Urea	0.04 gm. per 1 cc. of urine
E. phosphates and chlorids...	normal
Sulphates.....	still a little high

Microscopical Examination.—Microscopic examination of sediment obtained by centrifuge shows a marked diminution in amount of organic elements, but a great increase in uric acid crystals.

There are very few epithelial cells—mostly of renal type.

There are fewer casts—small and large hyaline—some finely granular.

Cylindroids are more abundant.

SEVENTH DAY, THURSDAY, SEPTEMBER 12.

The President slept a good deal during the night, and awoke in the morning feeling better. The beef juice was continued and increased, and a little chicken broth added to the dietary. He also had a little whiskey and water.

At 8.30 a. m. he had chicken broth, a very small piece of toast and a small cup of coffee. He did not care for the toast, and ate scarcely any of it.

The wound was dressed and washed with a weak solution of iodine and then with hydrogen dioxide. He was given 30 cc. of castor oil at 9.20 a. m.

The President now seemed at his best and his condition to warrant the favorable prognosis given out. The time for peritonitis and sepsis had passed. The bowels had moved and gas passed freely, showing that there was no obstruction. The tongue was clear, and the appetite increasing; and he seemed to be able to digest food. There was no pain nor tenderness in the abdo-

men, and he was able to turn easily and to sleep on his side. The urine was steadily increasing. His spirits were good and his mind clear, while his pulse, though frequent, was strong and of good quality, and the temperature low.

The analysis of the urine gave no uneasiness, as the amount of urea was fair; there was no albumin worth considering, and the casts were rapidly diminishing. There were no more of them than are found in a large percentage of cases following a long operation under ether. The excess of indican was taken to mean merely some intestinal indigestion, and to be of no serious import. The only symptom to cause any uneasiness was the frequency of the pulse. Still, anxiety on this score was relieved by knowing that the President had naturally a rapid pulse, and that it was easily excited. The open wound was not considered important. It looked healthy, and, although it would take a long time to heal, in itself it was evidently causing no harm, nor was it likely to.

Dr. McBurney left Buffalo for his home in the morning, having arranged to return at once if his presence was desired.

Toward noon it was noticed that the character of the pulse was not quite so good. Infusion of digitalis, 8 cc., was ordered, and strychnin, 0.002 gm.

It was thought probable that there was some intestinal toxemia, as there had been no free movement from the bowel since food had been begun, the oil having failed to act. Gradually the pulse went to 130, and grew weaker.

Dr. Charles G. Stockton was added to the medical staff in consultation. At 7 p. m. the President was given 0.20 gm. of calomel.

Bulletin 32, 8.30 p. m.—The President's condition this evening is not quite so good. His food has not agreed with him, and has been stopped. Excretion has not yet been properly established. The kidneys are acting well. His pulse is not satisfactory, but has improved in the last 2 hours. The wound is doing well. He is resting quietly. Temperature, 100.2°; pulse, 128.

At 9.30 p. m. a second dose of 30 cc. of castor oil was given, followed by a high enema of oxgall. This resulted in a large, dark semifluid stool, which seemed to exhaust him somewhat. Stimulants were given freely. No more beef juice or food was given. The pulse grew rapidly worse, but at midnight there seemed some improvement, as bulletin 33 shows. At 11 p. m. 420 cc. of normal salt solution was given subcutaneously.

Bulletin 33, 12 m.—All unfavorable symptoms in the President's condition have improved since the last bulletin. Pulse, 120; temperature, 100.2°.

FIFTH URINALYSIS.

Quantity.....	132 cc.
Color.....	light amber, very turbid
Specific gravity.....	1.025
Reaction.....	acid
Albumin.....	mere trace, if any
Indican.....	less
Urea.....	0.044 gm. per 1 cc. of urine
Sulphates.....	about normal
E. phosphates.....	much increased
Chlorids.....	normal

Microscopical Examination.—Microscopic examination of sediment obtained by centrifuge, shows fewer organic elements than the last examination. There is less uric acid and a large amount of amorphous phosphates. Renal casts, about as in the last examination, with very few cylindroids.

EIGHTH DAY, FRIDAY, SEPTEMBER 13.

At midnight the pulse was fairly good, 132. Strychnin and whisky were given at intervals, and hypodermics of camphorated oil.

Bulletin 34, 2.50 a. m.—The President's condition is very serious, and gives rise to the gravest apprehension. His bowels have moved well, but his heart does not respond properly to stimulation. He is conscious. The

skin is warm, and the pulse small, regular, easily compressible, 126; respiration, 30; temperature, 100°.

The wound had been dressed regularly in the manner described 3 times a day. At 9 a. m. the dressing was changed, and a mixture of balsam of Peru and glycerin put in on gauze after the douching.

Stimulants were continued as before, but more freely. Coffee, 45 cc., and clam broth, 60 cc., were given; also liquid peptonoids.

At 8.30, 1.50 gm. of adrenalin was given hypodermically, and repeated at 9.40.

At 10 a. m., nearly 2 pints of normal salt solution were given under the skin, and a pint containing adrenalin at 6 p. m. Nitroglycerin and camphor were also injected at various times, together with brandy and strychnin.

Stimulants as detailed above were used freely all day. 3.30 p. m. Pulse growing weaker.

5.00 p. m. Oxygen given and continued for some hours.

6.30 p. m. Last bulletin, No. 39:

Bulletin 39, 6.30 p. m.—The President's physicians report that his condition is most serious in spite of vigorous stimulation. The depression continues and is profound. Unless it can be relieved, the end is only a question of time.

At 6.35 p. m., and again at 7.40, morphin was given hypodermically, as he was very restless and seemed to be suffering.

9.00 p. m. Heart sounds very feeble.

The President continued to sink, becoming weaker and weaker.

At 10.00 p. m., the oxygen was discontinued. The heart sounds were very feeble and consciousness lost.

The President died at 2.15 a. m., September 14.

Drs. E. J. Janeway and W. W. Johnston, who, at the request of Dr. Rixey, had been summoned in consultation, arrived too late, but were present at the autopsy. Dr. McBurney also returned on Friday afternoon.

SIXTH URINALYSIS.

Color.....amber, turbid, with phosphates
Quantity.....252 cc.
Reaction.....acid
Specific gravity.....1.023
Albumin.....mere trace, if any
Urea.....0.047 gm. per 1 cc. urine
Indican.....a trace
E. phosphates.....increased
Chlorids.....normal
Sulphates.....a little high

Microscopical Examination.—Microscopical examination of sediment obtained by centrifuge, before and after clearing, shows no change from yesterday's sample. Casts, hyaline and granular, both large and small, comparatively few. Cylindroids, a few. Crystals, large amount of uric acid, some sodium urate, and in the untreated specimen a large amount of amorphous deposit, principally of phosphates. There are a few epithelial cells, small, granular. Occasional red cells and leukocytes.

REPORT ON THE AUTOPSY.¹

BY HARVEY R. GAYLORD, M.D.

Ordinary signs of death: ecchymosis in dependent portions of the body. Rigor mortis well marked. Upon the surface of the chest, to the right of the midsternal line, a spot 1 cm. in diameter, dark-red in color, with a slight crust formation covering it, 5.5 cm. from the suprasternal notch; from the right nipple, 10 cm.; from the line of the right nipple, 8.25 cm. Surrounding this spot, at which point there is an evident dissolution of the continuity of the skin, is a discolored area of oval shape extending upward and to the right. In its greatest length it is 11 cm.; and in its greatest width, 6 cm. It extends upward in the direction of the right shoulder. The skin within this area is discolored, greenish-yellow and mottled.

¹The autopsy was performed by Drs. Gaylord and Matzinger of the New York State Pathological Laboratory.

The surface of the abdomen is covered with a surgical dressing, which extends down to the umbilicus and upward to just below the nipples. The innermost layer of cotton is covered or stained with balsam of Peru and blood. On removing this dressing, a wound, parallel to, and somewhat to the left of, the median line, is exposed, inserted in which are 2 layers of gauze, likewise impregnated with balsam of Peru. The wound is 14.5 cm. in length, and is open down to the abdominal muscles. The layer of abdominal fat is 3.75 cm. in thickness. The appearance of the fat is good, a bright yellow in color. No evidence of necrosis or sloughing. In the left margin of the surgical wound, lying 1 cm. to the right of a line drawn from the umbilicus to the left nipple, 13.5 cm. from the nipple and 16.5 cm. from the umbilicus is a partly healed indentation of the skin, and an excavation of the fat immediately beneath it (this is the site of the entry of the bullet), extending down to the peritoneal surface. On making the median incision, starting from the suprasternal notch and extending to a point just below the symphysis, the subcutaneous fat is exposed, which is of bright yellow color and normal appearance except in an area which corresponds superficially to the area of discoloration described as surrounding the wound upon the chest wall. This area marks the site of a hemorrhage into the subcutaneous fat. The remainder of the subcutaneous fat is firm and measures 4.75 cm. in thickness on the abdominal wall. On opening the sheath of the right rectus muscle, it is seen to be of dark-red color. (Culture taken from ecchymotic tissue under the upper bullet hole and from between the folds of the small intestine. Three tubes from each locality on agar and gelatin.)

On opening the abdominal cavity, the parietal surface of the peritoneum is exposed, and is found to be covered with a slight amount of bloody fluid; is perfectly smooth and not injected. The great omentum extends downward to a point midway between the umbilicus and the symphysis. It is thick, firm; its inferior border is discolored by coming in contact with the intestines. Below the umbilicus a few folds of intestines are exposed. These are likewise covered with discolored blood, after the removal of which the peritoneal surface is found to be shiny. On the inner aspect of the abdominal wound the omentum is found to be slightly adherent to the parietal peritoneum, and can be readily separated with the hand from the edge of the wound. At this point the omentum is somewhat injected. This adhesion to the omentum is found to extend entirely around the abdominal wound. The parietal peritoneum immediately adjacent to the inner aspect of the abdominal wound is ecchymotic.

On removing the subcutaneous fat and muscles from the thoracic wall, the point which marks the dissolution of continuity of the skin upon the surface, is found to lie directly over the margin of the sternum and to the right side between the second and third ribs. There is no evidence of ecchymosis or injury to the tissues or muscles beneath the subcutaneous fat. On making an incision through the subcutaneous fat, directly through the wound upon the chest, a small cavity is exposed about the size of a pea just beneath the skin which is filled with fluid blood. The subcutaneous tissue underlying the area of discoloration on the surface of the chest wall shows hemorrhagic infiltration.

On removing the sternum, the lungs are exposed, and do not extend far forward. A large amount of pericardial fat is exposed. Pleural surface on both sides is smooth. There are no adhesions on either side within the pleural cavities. The diaphragm on the right side extends upward to a point opposite the third rib in the mammary line. No perceptible amount of fluid in either pleural cavity. On opening the pericardial cavity, the surface of the pericardium is found to be smooth and pale. The pericardium contains approximately 6 cc. of straw-colored, slightly turbid fluid. (Some taken for examination.)

On exposing the heart, it is found covered with a well-developed panniculus. The heart measures, from the base to the apex, on the superficial aspect, 10.5 cm. The right ventricle is apparently empty. The heart feels soft and flaccid. On opening the left ventricle, a small

amount of dark-red blood is found. The muscle of the left ventricular wall is 1.5 cm. in thickness; dark reddish-brown in color; presents a shiny surface. The average thickness of the pericardial fat is 3.5 mm. (Cultures made from the auricle.) The left auricle contains but a small amount of dark currant-colored blood. The mitral valve admits 3 fingers. The right ventricle, when incised in the anterior line, is found to be extremely soft; the muscular structure is 2 mm. in thickness. The panniculus measures 7 mm. The muscle is dark red in color; very shiny, and the pericardial fat invades the muscular wall at many points.

On opening the right auricle it is found to be filled and distended by a large currant-colored clot, which extends into the vessels. The tricuspid orifice admits readily 3 fingers. The coronary arteries are patulous and soft; no evidence of thickening.

Lungs are gray color, and contain a moderate amount of coal-dust pigment. Slight amount of frothy fluid escapes from the bronchi; but the pulmonary tissue is crepitant and free from exudate.

On unfolding the folds of intestine, there is no evidence of adhesion until a point just beneath the mesocolon is reached, when, on removing a fold of small intestine, a few spoonfuls of greenish-gray thick fluid flows into the peritoneal cavity.

On the anterior gastric wall is an area to which a fold of the gastrocolic omentum is lightly adherent. On breaking the adhesion there is found a wound about midway between the gastric orifices, 3.5 cm. in length, parallel with the greater curvature of the stomach, 1.5 cm. from the line of omental attachment. This wound is held intact by silk sutures. There is no evidence of adhesion at any other point on the anterior wall. The gastric wall surrounding the wound just mentioned for a distance of 2 cm. to 3 cm. is discolored, dark greenish-gray in appearance, and easily torn. On exposing the posterior wall of the stomach from above, along its greater curvature, the omentum is found to be slightly adherent, a line of silk ligatures along the greater curvature of the stomach marking the site where the omentum had been removed. On throwing the omentum downward, the posterior gastric wall is exposed. On the posterior wall, a distance of 2 cm. from the line of omental attachment, is a wound approximately 2 cm. long, held intact by silk sutures. The gastric wall surrounding this wound is discolored. On the surface of the mesocolon, which is posterior to the gastric wall at this point, is a corresponding area of discoloration, the portion coming directly in contact with the wound in the gastric wall being of dull gray color. The remainder of the surface of the posterior wall of the stomach is smooth and shiny. Beyond the surgical wound in the posterior wall of the stomach is found an opening in the retroperitoneal fat, large enough to admit 2 fingers. This opening communicates with a track which extends downward and backward as far as the finger can reach. The tissues surrounding this track are necrotic. On removing the descending portion of the colon, a large irregular cavity is exposed, the walls of which are covered with gray, slimy material, and in which are found fragments of necrotic tissue. Just at the superior margin of the kidney is located a definite opening which forms the bottom of the track traced from the stomach. On stripping the left kidney from its capsule, it is found that the superior portion of the capsule is continuous with the cavity. The weight of the left kidney is 5 oz., 1 gr. The kidney is readily stripped from its capsule; is dark red; the stellate veins are prominent, and along its greater curvature are numerous dark red depressions. On the superior aspect of the kidney is a protrusion of the cortex, dark red in color, and in this protrusion is a laceration 2 cm. long, extending across the superior border, approximately at right angles to the periphery of the kidney and from before backward. On incising the kidney, the cortex and medulla are not easily distinguishable from one another; both are of rose-red color, the cortex measuring approximately 6 mm. in thickness. The vessels in the pyramids of Ferrein are very prominent. Beneath the protruding portion of the surface, the cortex is dark red in color. This discoloration extends downward in

pyramidal form into the medulla. The laceration of the surface marks the apex of the protrusion of the kidney substance. Between the spleen and the superior aspect of the kidney is a necrotic tract which extends down and backward, and ends in a blind pocket. The tract which included the superior aspect of the kidney can be traced into the perinephritic fat to a point just above the surface of the muscles of the back.

The necrotic cavity which connects the wound on the posterior wall of the stomach and the opening adjacent to the kidney capsule is walled off by the mesocolon, and is found to involve an area of the pancreas, approximately 45 mm. in diameter and extending about half-through the organ. This organ at its center forms part of the necrotic cavity. Through its body are found numerous minute hemorrhages and areas of gray softening, the size of a pea or smaller. These are less frequent in the head portion of the pancreas.

A careful examination of the track leading down toward the dorsal muscles fails to reveal the presence of any foreign body. After passing into the fat, the direct character of the track ceases, and its direction can be traced no further. The adjoining fat and the muscles of the back were carefully palpated and incised, without disclosing a wound or the presence of a foreign body. The diaphragm was carefully dissected away, and the posterior portion of the thoracic wall likewise carefully examined. All fat and organs which were removed, including the intestine, were likewise examined and palpated, without result.

The great amount of fat in the abdominal cavity and surrounding the kidney rendered the search extremely difficult.

The right kidney is imbedded in a dense mass of fat; capsule strips freely; it weighs 5 ounces; measures 11.5 cm.; substance is soft; cortex is 6 mm. in thickness; rose-red in color; cut surface slightly dulled. There are a few depressions of the surface, and the stellate veins are prominent.

The liver is dark-red in color; the gall-bladder distended. The organ was not removed.

The autopsy continued for a longer period than was anticipated by those who had charge of the President's body, and we were requested to desist seeking for the bullet and terminate the autopsy. As we were satisfied that nothing could be gained by locating the bullet, which had apparently set up no reaction, search for it was discontinued.

Anatomical Diagnosis.—Gunshot wound of both walls of the stomach and the superior aspect of the left kidney; extensive necrosis of the substance of the pancreas; necrosis of the gastric wall in the neighborhood of both wounds; fatty degeneration, infiltration and brown atrophy of the heart muscle; slight cloudy swelling of the epithelium of the kidneys.

A matter of no inconsiderable embarrassment to us arose in the objection to our removing sufficient portions of the tissues for examination. We were able to secure only 2 small fragments of the stomach wall; tissue from around the wound upon the chest wall; a portion of fat from the wall of the necrotic cavity; a small piece of each kidney, that of the left kidney including the portion involved by the original wound; and pieces of heart-muscle from the right and left ventricles. The microscopical examination of these tissues follows:

The piece of retroperitoneal fat, where it forms part of the necrotic cavity, is seen on section to be covered with a thick gray deposit, which has an average thickness of from 4 mm. to 6 mm. Beneath this, and separating it from the fat, is a well-defined area of hemorrhage from 1 mm. to 2 mm. in thickness. The appearance of this piece of tissue is characteristic of the fat tissue surrounding the entire cavity. A section made perpendicular to the surface and stained with hematoxylin-eosin, shows the following characteristics: Under low power there is no evidence of round-celled infiltration between the fat cells, or of fat necroses. The surface of the tissue which, in the microscopical specimen was covered by a layer of grayish material, proves, under low power, to consist of a partly organized fibrinous deposit. At the base of this deposit is evidence of an extensive hemorrhage, marked by deposits

of pigment. The surface of the membrane is of rough and irregular appearance, and contains a large number of round cells with deeply stained nuclei. Under high power the organization of the membrane may be traced from the base toward the surface. The portion immediately adjacent to the fat tissue consists of a network of fibrin enclosing large numbers of partly preserved red blood corpuscles. In many areas the red blood corpuscles are broken down and extensive deposits of pigment are found. Extending into the fibrin structure of the membrane are numerous typical fibroblasts and round cells. In some regions pigment is evidently deposited in the bodies of large branching and spindle cells. Here and there, included in the membrane, are the remains of fat cells, and toward the surface of the membrane a large number of round cells scattered through the interstices of the membrane. There are but few polymorphonuclear leukocytes. Here and there in the membrane are fragments of isolated fibrous connective tissue with irregular contours and an appearance suggesting that they are fragments of tissue which have been displaced by violence and included in the fibrin deposit. The fibrin in the superficial layers of the membrane is formed in hyaline clumps. The organization along the base of the deposit is comparatively uniform.

Sections stained with methylen blue, carbol-thionin and Gram's method were carefully examined for the presence of bacteria, with negative results. Even upon the surface of the membrane there are no evidences of bacteria.

The section of the left kidney including the triangular area of hemorrhage described in the macroscopical specimen, reveals the following appearances. (Section hardened in formalin, stained with hematoxylin-eosin.) Examined macroscopically, section represents a portion of a kidney cortex made perpendicular to the surface of the cortex, and including an area of hemorrhage into the substance of the cortex 1 cm. in length, measured from the capsular surface downward, and presenting a width of from 5 mm. to 6 mm. The capsular surface has apparently been torn.

Under low power the margins of the preparation are found to consist of well preserved kidney structure. There is a slight amount of thickening of the interstitial tissue, and occasional groups of tubules are affected by beginning cloudy swelling. The glomeruli are large and present a perfectly normal appearance. As we approach toward the center of the preparation, occasional glomeruli are met with in which the capillary loops are engorged and the adjacent tubules contain red blood-corpuscles. A short distance further, the kidney structure becomes entirely necrotic. Here and there the remains of tubules may be made out, and these are infiltrated with cells. The necrotic area presents a rough, net-like structure. As we approach toward the surface of the kidney, we find that the necrosis becomes more marked. There is the merest suggestion of kidney structure, its place being taken by disintegrated red blood-cells and leukocytes, embedded in a well-defined fibrinous network. There is great distortion of the kidney structure about the periphery of the necrotic area. In this region a considerable amount of pigment is also found in the necrotic areas.

Under high power, the characteristics of the necrotic tissues may be better observed. The kidney structure is broken up and torn into irregular fragments, infiltrated by red blood corpuscles and leukocytes. In the portion of the necrotic mass beneath the capsule, the kidney structure is practically obliterated and is replaced by a network of fibrin, which includes large numbers of red blood-cells and leukocytes. Scattered through the entire necrotic area are frequent deposits of pigment. In the deeper portions of the necrotic area, the margins of the fibrin deposit are invaded by fibroblasts from the connective tissue structure of the kidney. The organization in these areas is, however, slight.

Sections stained with methylen-blue and Gram's method and carefully examined under oil immersion, fail to reveal the presence of any organisms. In preparations stained with methylen blue, the deposits of pig-

ment may be readily observed. Section of the same tissue hardened in Hermann's solution and examined for fat, shows the presence of numerous fat droplets within the epithelium of the tubules which are adjacent to the area of necrosis. In the portions of the preparation more widely distant from the area of necrosis, no fat is present.

Section of the right kidney hardened in formalin and stained with hematoxylin-eosin, reveals the presence of areas in which slight parenchymatous degeneration of the epithelium in the uriniferous tubules may be noted. These areas are not extensive, and are confined to single groups of tubules. The interstitial connective tissue of the organ seems to be slightly increased in amount, but there is no well-defined round-celled infiltration. An occasional hyaline glomerulus is to be met with in these cases surrounded by increased connective tissue. The epithelium of the kidney tubules, aside from those in which the parenchymatous degeneration is present, is well preserved. The nuclei are well stained; protoplasm, finely granular.

A fragment of the stomach wall taken from the immediate neighborhood of the anterior wound is in a condition of complete necrosis. The nuclei of the cells are scarcely demonstrable. The epithelial surface is recognized with difficulty. At its base are apparently a few round cells. Examination of the blood vessels reveals nothing characteristic. There is apparently no evidence of thrombosis. A section made through the gastric wall at some distance from the wound, reveals the well-preserved muscular structure of the gastric wall, which presents no characteristic alterations. Superficial portions of the epithelium have apparently been affected by postmortem digestion. However, in one portion of the preparation, the epithelium is intact, and shows distinct evidence of marked round-celled infiltration between the glandular structures. The blood-vessels contained blood-corpuscles with the usual number of leukocytes.

The fragments of heart-muscle which were removed from the right and left ventricular walls, were examined in the fresh state, and exhibited a well-defined fatty degeneration of the muscle fibers, and in the case of the right ventricular wall, an extensive infiltration between the muscle fibers, of fat, was apparent. Sections from these fragments of muscle hardened in Hermann's solution, are taken for examination. A fragment of muscle from the right ventricular wall was removed at a point where the fat penetrated deeply into the muscular structure, the ventricular wall at this point showing an average thickness of 2.5 mm. Under low power, the muscle fibers are separated into bundles by masses and rows of deeply fat cells. The muscle fibers are seen to contain groups of dark brown granules lying in the long axes of the cells. Under high power, these are resolved into extensive groups of dark brown pigment arranged around the nuclei. The muscle fibers are slender, the cross and longitudinal striation is well-defined. Examined near the margin of the preparation, where the osmic-acid fixation has been successful, all of the muscle fibers are found to contain minute black spherical bodies, extending diffusely through all the muscle fibers about the entire margin of the preparation. These fine fat droplets are present in sufficient amount to speak of an extensive diffuse fatty degeneration of the muscle fibers. Where the large fat cells have separated the muscle fibers, these are found to be more atrophic than those in the central portions of the larger bundles.

The examination of the section through the healed bullet wound on the chest walls reveals nothing of importance. The dissolution of continuity is filled in by granulation-tissue, and there is evidence of beginning restoration of the epithelium from the margins. Stains for bacteria give negative results.

To sum up: The macroscopical and microscopical findings of the autopsy, may be stated, as follows: The original injuries of the stomach-wall had been repaired by suture, and this repair seems to have been effective. The stitches were in place, and the openings in the stomach-wall effectually closed. Firm adhesions were formed both upon the anterior and posterior walls

of the stomach, which reinforced these sutures. The necroses surrounding the wounds in the stomach do not seem to be the result of any well-defined cause. It is highly probable that they were practically terminal in their nature, and that the condition developed as a result of lowered vitality. In this connection there is no evidence to indicate that the removal of the omentum from the greater curvature and the close proximity of both of these wounds to this point, had any effect in bringing about the necrosis of the gastric wall, although circulatory disturbances may have been a factor. The fact that the necrotic tissue had not been affected by digestion strongly indicates that the necrosis was developed but shortly before death. The excavation in the fat behind the stomach must be largely attributed to the action of the missile. This may have been the result of unusual rotation of a nearly spent ball, or the result of simple concussion from the ball passing into a mass of soft tissues. Such effects are not unknown. The fact that the ball grazed the superior aspect of the left kidney, shown by the microscopic investigation of that organ, indicates the direction of the missile, which passed in a line from the inferior border of the stomach to the tract in the fat immediately superior to the kidney. There was evidence that the left adrenal gland was injured.

The injury to the pancreas must be attributed to indirect, rather than direct, action of the missile. The fact that the wall of the cavity is lined by fibrin, well advanced in organization, indicates that the injury to the tissues was produced at the time of the shooting. The absence of bacteria from the tissues, indicates that the wound was not infected at the time of the shooting, and that the closure of the posterior gastric wound was effectual. The necrosis of the pancreas seems to us of great importance. The fact that there were no fat necroses in the neighborhood of this organ, indicates that there was no leakage of pancreatic fluid into the surrounding tissues. It is possible that there was a leakage of pancreatic fluid into the cavity behind the stomach, as the contents of this cavity consisted of a thick, grayish fluid, containing fragments of connective tissue. In this case the wall of fibrin would have been sufficient to prevent the pancreatic fluid from coming in contact with the adjacent fat. The extensive necrosis of the pancreas would seem to be an important factor in the cause of death, although it has never been definitely shown how much destruction of this organ is necessary to produce death. There are experiments upon animals upon record, in which the animals seem to have died as a result of not very extensive lesions of this organ. One experiment of this nature reported by Flexner (*Journal of Experimental Medicine*, Vol. II) is of interest. The fact that concussion and slight injuries of the pancreas may be a factor in the development of necrosis, is indicated by the researches of Chiari (*Zeitschrift für Heilkunde*, Vol. XVII., 1896, and *Prager Med. Wochenschr.*, 1900, No. 14), who has observed (although a comparatively rare condition) extensive areas of softening and necrosis of the pancreas, especially of the posterior central portion which lies directly over the bodies of the vertebra, where the organ is most exposed to pressure or the effects of concussion. The wound in the kidney is of slight importance, except as indicating the direction taken by the missile. The changes in the heart, as shown by the macroscopic inspection and the microscopic examination, indicate that the condition of this organ was an important factor. The extensive brown atrophy and diffuse fatty degeneration of the muscle, but especially the extent to which the pericardial fat had invaded the atrophic muscle fibers of the right ventricular wall, sufficiently explain the rapid pulse and lack of response of this organ to stimulation during life.

REPORT ON THE BACTERIOLOGICAL EXAMINATION.

BY HERMAN G. MATZINGER, M.D.¹

It is obvious that the short space of time which has elapsed since the death of the President has hardly

been sufficient to prepare a complete and thorough bacteriological report. This report contains all the observations which have been made up to this time:

On September 11th, during the life of the President, cultures were made by Dr. Wasdin from the base of the abdominal wound and from dressings removed at the same time. These were submitted to me for examination, and showed the presence of the ordinary pus organisms: *Staphylococcus pyogenes aureus* and *Staphylococcus cereus albus*, with a gas-forming bacillus which, in pure anaerobic culture on glucose gelatin, forms small, pearly, translucent colonies, with no liquefaction. In litmus milk it produces acid, but no coagulation. Morphologically, it is apparently a capsulated, short bacillus, which takes stains poorly, and which does not stain by Gram's method. Inoculated into the ear vein of a rabbit, which was killed immediately afterward, it produced, after 24 hours in the body of the rabbit, a marked accumulation of gas in the organs, and again grew out in pure culture. As yet the organism is not fully identified.

None of these cultures showed streptococci. A bacterium which appears to be one of the proteus group was, however, isolated, which does not stain by Gram, and appears in varying forms, sometimes small oval, and again quite rod-shaped and in short chains. Sometimes it is surrounded with a slimy covering, which remains clear like a capsule when the organism is stained. On slanting agar, it produces a whitish, slimy growth, which gradually runs to the bottom of the slant and produces an odor of decomposition. On gelatin, it grows very slowly with slight and slow indication of liquefaction. In litmus milk, it produces acid and rapid coagulation.

At the time of the autopsy, September 14th, inoculations were made by myself. From the base of the wound, there was again obtained a number of pus organisms, principally a white staphylococcus and the bacterium described above, but no streptococci. Cultures made from the peritoneal surface of the intestines were entirely negative. Cultures made from the under surface of the omentum near the colon, were entirely negative, both with and without oxygen. Cultures from the blood of the right auricle were likewise negative. A very careful and extensive search for micro-organisms in the contents of the necrotic cavity, behind the stomach, reveals nothing but a short stumpy bacterium, which, as far as the work has been carried at present appears to belong to the proteus group, and is very like *Proteus hominis capsulatus*, described by Bordoni and Uffreduzzi.

Morphologically, it is not uniform, and sometimes appears almost encapsulated, being surrounded by material that does not stain; is quite refractory to Gram, and produces an odor of decomposition as it grows. It does not liquefy gelatin rapidly and grows slowly, as a glistening white elevated surface growth which slowly sinks; but on agar in the thermostat it grows very rapidly, as a moist, grayish-white, translucent mass. Colonies on gelatin plates have a clean circumference, are granular and quite refractive. In litmus milk it produces acid and rapid coagulation. Animal experiments are still incomplete and cannot be published at this time.

It must be stated that there is occasion for suspecting that this may be a contamination, either from the outer wound or elsewhere, because, quite unavoidably, the technic of obtaining the material and cultures from the necrotic cavity was not absolutely correct.

Cultures made from the small area of broken-down tissue under the chest wound at the time of the autopsy, grew what appears to be *Staphylococcus epidermidis albus*, described by Dr. Welch.

The slimy, gray, necrotic material from the cavity above the transverse mesocolon behind the stomach, was carefully examined microscopically, with the result that very few micro-organisms were found in the fresh state, and no recognizable tissue elements of any kind, no leucocytes or pus-corpuscles, but an abundance of crystals which appeared more like fatty acid than fat crystals. It contained no free hydrochloric acid, and was alkaline in reaction. Experiments as to its digestive power were negative. About 2 cc. of this material

¹Bacteriologist to the New York State Pathological Laboratory.

was injected into the space behind the stomach of a dog (still living), with no results except quite an elevated temperature for 3 or 4 days. Other animal experiments are also still incomplete.

It might be well to state here that the bacteriological examination of the chambers and barrel of the weapon used, as well as the empty shells and cartridges, ordered by the District Attorney, was entirely negative, except that from a loaded cartridge there was grown an ordinary staphylococcus and a mould. The chemical examination of the balance of the loaded cartridges, made by Dr. Hill, chemist, was also negative.

The absence of known pathogenic bacteria, particularly in the necrotic cavity, warrants the conclusion that bacterial infection was not a factor in the production of the conditions found at the autopsy.

VIRCHOW'S BIRTHDAY CELEBRATION.

It is a pleasant thought that the American medical fraternity has honored itself in honoring Dr. Rudolf Virchow in a fitting testimonial held in New York last Saturday night. In so doing they have allied themselves with the medical world of Europe in deed as well as in spirit and have made manifest to the followers of science that its borders are universal and its masters are recognized as readily and honored as heartily in this, the New World, as in the Old.

THE VIRCHOW DINNER

AT SHERRY'S,
Fifth Avenue and Forty-fourth Street,
Saturday, October 12th, 1901,

AT SEVEN P. M.

J. D. BRYANT CHAS. L. DANA
A. JACOBI ANDREW H. SMITH
WM. H. THOMSON.

Committee.

This is the simple announcement that drew together over 100 representative medical men of the country and many others were present in thought if not in body. The list of those who attended or contributed is as follows:

Drs. I. Adler, S. Alexander, J. M. Anders, A. C. Abbot, C. Beck, A. B. Ball, J. D. Bryant, J. Byrne, C. E. Bruce, J. F. Bell, L. F. Bishop, E. F. Brush, J. F. Chauveau, W. F. Chappell, C. N. B. Camac, John G. Clark, W. H. Carmalt, E. K. Dunham, W. W. Dold, Ch. L. Dana, Judson Daland, F. W. Dercum, M. Einhorn, C. A. Elsberg, E. D. Fisher, N. A. Fairbairn, C. B. Fitzpatrick, J. Fuhs, G. R. Fowler, Simon Flexner, A. Gerster, A. L. Goodman, G. M. Gould, Henry Hun, H. A. Hare, Henry M. Hurd, W. S. Halstead, T. W. Hastings, J. E. Ill, M. P. Jacobi, Ch. Jewett, W. James, G. W. Jacoby, S. E. Jelliffe, A. Jacobi, E. G. Janeway, W. B. Johnson, W. H. Katzenbach, S. A. Knopf, C. I. Kipp, G. Langmann, F. Lange, F. Levisseur, S. J. Meltzer, J. C. McCoy, John P. Munn, Walter Mendelson, Alfred Meyer, J. H. Musser, W. G. McCollum, Paul F. Munde, Phillip Marvel, Robert A. Murray, Ferd. S. McHale, W. P. Northrup, J. D. Nisbet, William Osler, E. L. Opie, Charles N. Packard, Edw. S. Peck, W. M. Polk, J. Rudisch, A. R. Robinson, B. Robinson, T. M. Rotch, M. H. Richardson, M. R. Richards, M. A. Starr, F. A. Sondern, R. Sayre, A. A. Smith, D. M. Stimson, George F. Shrady, R. A. Sands, A. H. Smith, B. Sachs, A. Stengel, F. J. Shattuck, Theo. Smith, W. H. Thomson, John S. Thacher, James Tyson, H. N. Vineberg, J. A. Wyeth, F. W. Wunderlich, J. H. Wiggan, R. G. G. Wiener, L. Weber, William Welch, J. C. Wilson.

The menu was a pleasing surprise to the guests, reproducing on the outside cover, in the

familiar green Virchow's *Archiv für pathologische Anatomie*.

Within were two portraits, one of Virchow when thirty-eight years old, presented by the eminent scientist to Dr. Andrew H. Smith, of this city. We here reproduce it. A later portrait was also given as per the second illustration offered to the readers of the MEDICAL NEWS.

The toasts were few, but were of great interest.

Dr. William Osler of Baltimore acted as chairman and spoke of Virchow as a scientist, especially along the lines of anthropology and public health.

This night, he said, was a notable one, in that eighty years ago it gave birth to one of the great lights of modern science, and it was



Virchow in 1859.

a night that marked a boundary of eighty years of almost unparalleled scientific activity. Genius, he remarked, has been said to be a matter of environment and of birth and in both respects Virchow could be said to have been most fortunate. It had been his great opportunity to have been a pupil of Johannes Müller, and the spirit breathed into the pupil was later expressed by him in his own address on Johannes Müller, his teacher, at the time of the latter's death. Scientific pathology, he then wrote, was at the time of Müller still struggling to free itself from the vague mysticism of the later empirics; conceptions of disease were theoretical and it was Müller's great service to have brought back into medical science the spirit of early Greek medicine. Observation, study and analysis had been the mainspring of these early Greek philosophers and this spirit had slumbered for at least fourteen hundred years until the sleep of idle

speculation had been broken by Vesalius in anatomy. But in pathology it had been Müller who had been the apostle of observation to bring into active life the just awakening science.

It is surprising, said Dr. Osler, speaking of his work in anthropology, that he should have been so prolific in studies, and these were not the work of a mere dilettante, dabbling in skulls and in relics, but those of a recognized master. He was conversant with all of the important research work going on in the field.

Illustrating his great interest in this line of work, also casting a side light on the spirit of the man, Dr. Osler said that at one time desiring to present him with something that he thought Virchow would like, he obtained the help of some of his friends on the Canadian Geological Survey, who procured for him some skulls of the British Columbian Indians. These he presented to Dr. Virchow, who was delighted to get them. He recognized them, knew all about them and kept his students waiting while he pointed out their most interesting archeological features, contrasting them with other skulls derived from far distant lands and from prehistoric peoples.

Of his contributions to the science of hygiene his "Gesammelte Abhandlungen" give testimony of great application and virility. He was an ardent and fertile student. No other worker on these problems, save, perhaps, Pettenkofer, could be said to have made such radical changes in the then prevailing mismanagement of municipal health affairs. The city of Berlin owes much of its present excellent sanitary system to his labors.

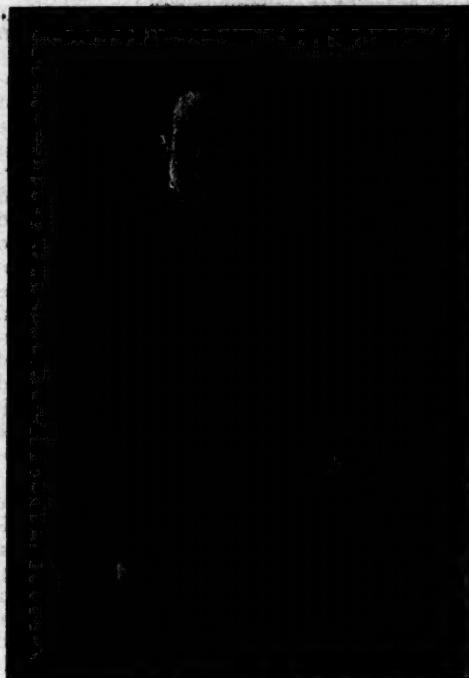
Dr. Osler then proposed a toast to the master which was responded to with a hearty "Drei mal hoch."

Dr. Gould then read a cablegram to be sent to Dr. Virchow which said that 100 of his medical friends and admirers were gathered in New York to drink his health and wish him continued years of usefulness.

Virchow as a Pathologist.—Dr. William H. Welch of Baltimore then gave an excellent response to this toast. He said: "We are here to-night to honor a man whose services to science, to truth, and to humanity, are immeasurable, and in so doing we honor ourselves. It has been said that whoever would undertake to give a comprehensive picture of the life and work of Rudolf Virchow should be a genius approaching in universality Virchow himself. Hence it is that attempts to estimate the work of this great master, its different aspects—pathological, anthropological, hygienic, political, and other—must be assigned to different speakers or writers. I have been asked to speak more particularly of Virchow's work in pathology, but it would be proposterous to attempt to give in an after-dinner talk even in barest outline an estimate of his manifold activities in this large field. All that I can hope to do is to present certain features

which seem to me of especial significance, leaving untouched many others of equal importance.

"Virchow's work as an investigator began in the fifth decade of the last century, at a time when medicine was struggling to free herself from the bondage of dogmas and speculative systems, which had followed one another for centuries. The sciences collateral to medicine, such as chemistry, comparative anatomy, embryology and physiology, had already entered upon the new paths of exact observation and experiment. Gross pathological anatomy had been



Rudolf Virchow.

cultivated with enthusiasm and marked success since the beginning of the century, first in France and later in Vienna, but so erroneous were the deductions drawn therefrom, in relation both to general pathology and to clinical medicine, that its influence, reformatory as it was in certain directions, was in others positively injurious to practical medicine. With the exception of Müller's important histological study of tumors, published in 1838, there had been scarcely any fruitful application of the microscope to pathology.

"Meager as were his facilities for pathological study at the start under Robert Froriep, nevertheless Virchow's surroundings at that time must have been in many ways inspiring. The spirit of reform had begun to stir in nearly all fields of human activity. Never before had there gathered in one place

such a band of young, enthusiastic and productive workers in science, as were assembled about this time in Berlin in the laboratory of Johannes Müller, the greatest physiologist and teacher of biological science of the first half of the century, Virchow, Simon, Reinhardt, Meyer, Remak, Traube, Du Bois-Reymond, Brücke, Helmholtz. These were men all destined to become great investigators, some of them reformers in their special fields.

The directions first followed by Virchow in his pathological investigations were most fortunate and calculated to lead a man of his originality and clear insight to new points of view of fundamental importance. His earliest studies were of the chemistry and morphology of the blood, then of inflammation, and soon afterward of the connective tissues. He was thus brought at once face to face with problems which we still recognize as of the most far-reaching significance in pathology. The work which marks the culmination of the first Berlin and early Würzburg periods of Virchow's studies is that upon thrombosis and embolism—an epochal work which introduced a practically new and important chapter into pathology. The series of papers upon this subject collected in Virchow's "*Gesammelte Abhandlungen*" should be studied by medical students as models of exact observation, ingenious and well devised experimentation, and correct generalization. Here at last instead of speculations based upon incomplete knowledge of the facts we have the methods of the natural and physical sciences applied to problems of practical and scientific medicine.

"But Virchow was already engaged in those researches which led to the foundation of cellular pathology and which establish him as the greatest of reformers in scientific medicine. The underlying facts and principles of cellular pathology were worked out by Virchow in the early fifties while in Würzburg, but they did not become the common property of the medical world before the publication of his classic on "*Cellular Pathology*" in 1858. It would lead too far to attempt to rehearse here the steps which led to this great discovery. The story is an interesting one and has been told by Virchow himself in its main outlines in the opening article of the one hundredth volume of his *Archiv*. Suffice it to say that there were struggles and controversies before the universal acceptance of the great truth formulated by Virchow—*Omnis cellula e cellula*.

"We are so habituated to think in terms of the cell that it is difficult to put ourselves back even in thought to a time when pathological views were based upon the conceptions of plastic exudates and formative blastemata. The establishment of the principles of cellular pathology marked the greatest advance which scientific medicine had made since its beginning. Cellular pathology is the foundation upon which the stately superstructure of

modern medicine is built. It is not a dogma, a doctrine of the schools, to be superseded by some new speculation, but it is a great biological principle. It places medicine in the rank of the biological sciences, and permits its fruitful cultivation by methods common to all natural sciences. It is to the pathologist what the atomic theory is to the chemist, what the mechanical equivalent of heat and the theory of the ether is to the physicist. It is even more than these, for we can see and study cells. It has opened up new and limitless fields of investigation which as yet have been explored only in relatively small part, and each new stone is added to the building without a quiver in the foundations.

"It is true that the last word has not been spoken in our efforts to penetrate to the finest structural elements affected by disease. There are doubtless ultimate formed and definite constituents within the protoplasm of cells, and it would be hazardous to predict to what point future investigations may lead in the understanding of their relation to the cell and their demonstrable participation in disease, but thus far there is no evidence to warrant us to regard these intracellular elements as independent, vital units in the sense in which we look upon the cell as unit. The seats of disease were transferred first from regions to organs by Morgagni, thence to the tissues by Bichat, and finally to the cells by Virchow, and there they are likely to remain, however far the analysis of the structure of the cell may be carried.

"It is impossible on this occasion to attempt to follow further the special pathological investigations of Virchow, to speak even of his monumental work on tumors. Such an attempt would lead us into every corner of pathology, for it is characteristic of the man that there is no pathological subject, however trivial at the time it may seem, which has not his interest and is not attacked by him with the same painstaking zeal as the most important one.

"There are two or three general considerations relating to Virchow's attitude and work to which I should like briefly to refer, familiar as they must be to you all.

"One is the thoroughness of Virchow's investigation of whatever subject he has taken in hand. His are no half-finished, 'preliminary communications,' launched prematurely in fear of anticipation of his results by some fellow worker, but with complete, critical command of all that his predecessors, not merely those of yesterday, may have done, and with due acknowledgment of their work, he presents in an orderly, concise and clear manner the results of his own investigations, based upon a thorough study of all the facts pertinent to the subject. If genius is 'the capacity to take infinite pains,' Virchow is an example, as indeed he is of genius however defined.

"Virchow has always emphasized and in his work exemplified the fact that it is method and not doctrine which characterized his school, if I may be permitted to use in a good sense a term which has such a baneful sound in the history of medicine. He says in his interesting article on 'The Scientific Method and Points of View in Therapeutics'; 'The Method of Investigation is That Which is Essential and Determining. It is the method which distinguishes the Harveys, the Hallers, the Bells, the Magendies, and the Müllers from their smaller contemporaries. This is the soul of the natural sciences.' Virchow's method is none other than that which alone is productive of results in natural science—the familiar and long-tried, but in medicine often enough neglected, method of careful, accurate observation, properly directed experimentation, and deduction of general principles based upon sound reasoning and full knowledge.

"The true position belonging to pathological anatomy was first clearly defined by Virchow. His convincing critique of Rokitansky's general pathology was directed as he said, 'not against the Rokitansky whose special pathological anatomy remains untouched, but against the Rokitansky who had reached out beyond the boundaries of pathological anatomy.' Virchow recognized promptly the error of his predecessors in attempting to construct a general pathology, or physiological pathology, as he prefers to call it, solely from the observation of morbid changes at the autopsy table. He pointed out the harm which had been done to practical medicine by such mistaken attempts. General pathology must call to its service not only morbid anatomy, but also experiment and clinical medicine. Nor is practical medicine to be founded upon pathological anatomy and general pathology alone, important as these are to the physician in many ways. Clinical medicine, as well as every other department of medicine, must be investigated by itself, deriving, as should every science, all the aid it can from allied sciences.

"Virchow broke completely with the old ontological view that disease is something apart, an entity. He promulgated the conception that disease is life under changed conditions, and that its operations are subject to the same laws as control the workings of the body in health. Hence the fundamental importance of a knowledge of physiology to the pathologist and the physician.

"The far-reaching import of this conception of disease was never more apparent than since the discovery of the relation of micro-organisms to the causation of infectious diseases, and here I may be permitted a word as to Virchow's attitude toward this great discovery. It is unquestionably a mistake to suppose that it is not a sympathetic one, for the reason that various matters pertaining to the subject have encountered his criticism.

"Virchow, as Dr. Osler has just told us, is himself a pioneer in the field of preventive medicine, as is well known to all acquainted with his investigations, at the outset of his career, of famine typhus in Upper Silesia, and with his other contributions in this domain. One must know something of the political conditions in Prussia in those days to appreciate fully the courage of this young physician of 26 in pointing out the dreadful social conditions in which the people of this region, ravaged by typhus, were living and the duty of the State to intervene by appropriate sanitary improvements! This work was eventually instrumental in introducing a new era of sanitary reform in Germany. Virchow's special investigations relating to infection and parasitic diseases entitle him to a prominent place in the history of this important chapter in Pathology. I need only call to mind his studies on trichinosis.

"But Virchow has done an important service in defending the fundamental principles of cellular pathology and in sustaining the conception of disease to which I have referred, by making it clear that the parasite is not the disease, that it is the disturbances of cellular structure and function induced directly or indirectly by the parasite which constitute the essence of the disease, and that new properties acquired by the fluids of the body through the action of bacteria, which seemed to be leading some short-sighted observers back to the old humoralism, must in the last analysis be derived from the cells. Cellular pathology has only been strengthened by the great discoveries in bacteriology, and ontological and humoral conceptions of disease have been revived in these later days only to be discarded by all profound thinkers in pathology. Virchow's critical attitude toward hasty conclusions and generalizations in this new branch of science has really been of great service.

"I have left myself no time to speak of Virchow as a teacher of pathology, or as the organizer of a great laboratory, the first devoted to the subject and the Mecca for students from all countries who are proud to call him their master.

"Fifty years ago Rudolf Virchow stood in the center of the world of scientific medicine; to-day at the completion of his eightieth year, still energetic and active, he stands in the same place. His fame is imperishable. His name will remain for all time one of the glories of medicine and science. May the years which remain to him be full of health, and happiness and prosperity!"

Personal Reminiscences.—Dr. Andrew H. Smith of New York then spoke of Virchow as a man and as a teacher and in a very charming manner took his hearers back to the old Pathological Institute of Berlin; in 1858-1859 Virchow was then thirty-eight years of age and was full of enthusiasm and ingenious devices

for teaching of pathological anatomy. He told how the early autopsies had been performed and spoke of his surprise and delight to see how Virchow revolutionized for him and his students the early ideas of the functions of an autopsy. Previously such examinations had been made simply to try to ascertain what the man had died of and the examinations were very superficial; small openings being practised and minute dissections alone of the affected organs made. Virchow changed all this; with one fell swoop, he would open the body from the chin to the pubes and then would follow his classical method of opening the chest. Dead men literally spoke while Virchow performed an autopsy and the idea was "how much can be learned about this body from all possible points of view." The cause of death was but a secondary consideration. The dead body was a mine to be explored and made to yield rich products of information.

He also spoke of the methods for teaching microscopical pathology as then carried on, telling in detail of the railroad of microscopes that Virchow had constructed in his laboratory.

Dr. Smith spoke of having commenced to translate the "Cellular Pathology" and of his trouble in finding a publisher, revealing incidentally that publishers at that day were as shortsighted in not recognizing the work of genius as at the present time and that then as well as now commercial points of view seemed to be in the ascendancy.

In the matter of style, Dr. Smith said that Virchow had complained bitterly of the vermicular form of medical literature in vogue in his youth and he at that time commenced to put his thought in simple and straightforward literary form. A style which was marvellously clear and clean cut. Virchow was most democratic as a man and most approachable. He was always ready to help his students and was a man of most charming and engaging personality.

Virchow as a Citizen.—Dr. A. Jacobi of New York gave a stirring address which was greatly enjoyed by all those present. He said:

RUDOLF LUDWIG KARL VIRCHOW was born October 13, 1821, at Schivelbein in Pomerania, was educated from 1835 at the Gymnasium of Cöslin, went after his examination for "maturity" to the medical Frederic William Institute at Berlin—the school for military surgeons—graduated in 1843; became prosecutor in the Charité Hospital 1846, gave courses in pathological anatomy; obtained the permission to deliver lectures in the University of Berlin, as Privat docent, 1847; was sent February 20, 1848, as medical expert to Upper Silesia to study the "hunger typhus" epidemic; returned to Berlin March 20th and delivered his report; was on account of it deprived of his governmental positions; reinstated in part only

on account of the urgent petitions of a large part of the profession of Berlin, but remained then and for a long time in the honorable possession of the hatred aroused in the governmental party by his independent bearing, and his zeal in asking for reforms, and left Berlin to assume the offered professorship of pathological anatomy at Würzburg, to the great relief of the Prussian government.

This is how it all happened. When his communications on the Silesian epidemic of the starvation typhus were published, they were found to contain much more than the government relished. They were medical; there were histories of cases and autopsies; they were also historical, scientific, hygienic and reformatory. He described graphically and truthfully the revolting neglect through centuries of the Polish population of Upper Silesia, their poverty, dirtiness, ignorance and brutality, their mental slavery under the Catholic hierarchy, and their physical abjectness under the Prussian bureaucracy and feudalism. He looked for salvation not in medication, but in education, in social reforms, in culture with its daughters: liberty and welfare, in full and unfettered Democracy; education of the people, agricultural institutes, raising and instructing the numerous orphans; road building and general recognition of the fact that, as he expressed it, "with our century begins the social era." A few weeks after he edited with Leubuscher, a new magazine, the *Medical Reform*. In the first essay he pronounced the doctrine, that "the physicians are the natural attorneys of the poor, and the social problem belongs in its intrinsic parts to their jurisdiction." Then he urged a reform of the public relief of the sick which he declared must be obligatory; and the recognition of the need of a hygienic existence of every human being; reforms in the medical profession, in University education, and in the entire medical legislation. Do not forget that all this happened and was preached just before and immediately after the March revolution of 1848. Remembering that, you will comprehend why the Prussian Government dismissed him, again reestablished him in a part of his positions, unwillingly but under the pressure exercised by the profession of Berlin. For it was the time when the Prussian government, in spite of its temporary defeat, had retained all its absolutistic instincts, had exhibited all its cowardice common to all tyrants, and its senseless confusion during unexpected difficulties, its revengeful reactionary cruelty after unheard of humiliation—indeed, on March 19th his Majesty was compelled by the victorious people to uncover his Royal head in the presence of his dead enemies shot on the barricades of the day before. Thus it happened that when the call to Würzburg reached Virchow, he was encouraged by the grinning authorities to accept it. In the very last numbers of his *Medical Reform* he said: "The med-

ical reform we had in mind, was a reform of science and society in general." Now you will also comprehend that among the revolutionary youth that died on the battle-fields or pined in dungeons, not a few were students of medicine.

Such a man never lost his interest in public affairs, and never gave up his labors in their behalf. The public hygiene of his country, of all countries, owes much to his study and initiative. He was the main factor in the great work of canalization of Berlin, the cultivation of vast territories by the utilization of sewage, the organization of medical care of the sick, the erection of hospitals such as Moabit, Friedrichshayn, Urban, Empress Frederic Child's Hospital, Dalldorf, Lichtenberg. The problems of tenements, of child and general mortality have forever occupied him. Nobody more than Virchow has taught the medical world the importance of medical statistics; nobody before him, or like him, has utilized physical statistics more uniformly and more successfully in the domains of anthropology and ethnology, and thus co-ordinated—under the influence of the same methods—all the branches of biological research.

The organization of the medical care of the soldiers during the campaigns of 1866 and 1870 was partly his work. The history of hospitals and hospital work was his study for years. It was then that he wrote what I had the proud gladness of quoting twenty years ago in regard to our doings on this side of the Atlantic: "The French army lost, in the Crimean War, thirty-three per cent. of its men, viz., 95,615. Of this number, 10,240 were killed on the battlefields, and about as many died of their wounds in the hospitals. More than 75,000 men died of infectious diseases. In the American Civil War 97,000 died of their wounds, and 184,000 perished of infectious and other diseases. What a vast amount of pain and misery! What an ocean of blood and tears! And besides, what a number of errors, mistakes and prejudices! It is not necessary to enumerate the long list of blunders and sins. They are so well known as to serve in the future as warning examples. Let me say here that it was not misfortune alone that showed where the cause of the evil was, and then provided aid. If the French learned little or nothing in the Crimea, and the Americans so much in their Civil War as to create a new era in military medicine, the explanation is not to be sought for in the immensity of misfortune and misery undergone by the Americans, for they did not suffer any more than the French did in the Crimea. The explanation is in the critical and thoroughly scientific spirit, the clear perception, the sound and practical common sense which penetrated gradually every part of the American military administration, and which, with the astounding coöperation of an entire nation, accomplished more humane results

than any great war ever produced before. Whoever studies the copious publications of the medical staff of the American army, must again and again be astonished at the vast experience collected in them. Absolute accuracy of details, the most painstaking statistics, acquaintance with all branches of medical learning, and a comprehensive style, are united in them for the purpose of collecting and preserving, in the interest of the present and future generations, the new knowledge so dearly bought."

That is how a great writer expressed his knowledge, and a man fond of democratic government his sympathy with the results of the spontaneous work of a republican commonwealth. His interest in the welfare of the people he proved through many years by his participation in societies made up of the public at large; he lectured there frequently, mostly on physiological topics, and for dozens of years he has found the time to edit with Holtzendorff, an immense collection of popular lectures contributed by special workers all over the land.

For nearly forty years he had a seat in the town council of Berlin. It was through his influence mostly, that Berlin with its more than two millions of inhabitants, is a clean, healthy, well governed city, well governed in spite of the constant interference by the political government of the country. Indeed I do not know of any large city that has for dozens of years understood so well the municipal interests of the people as differentiated from the political demands of the Empire.

Only yesterday the word was passed in the Council of Berlin that the encroachments of the government ought not be endured. Dozens of years he was a member of the representative council of Prussia, and of the parliament of the Empire. That he selected his seat on the benches of the opposition is self-understood. When he was young he was known to be a revolutionist. He was maltreated by the government to the full extent of its possibilities; fortunately for him, and for all of us, he was not caught on a field of battle or in a conspiracy, actual or alleged, that could land him behind prison bars; but his tendencies were well understood. When once he demonstrated his new discoveries of thrombi and embolism in a case of pulmonary obstruction, old Schönlein, who was watching the result of his clinical activity in the morgue, shrugged his shoulders and said: "I notice you see barricades everywhere." This barricader now raised barricades indeed against many a nefarious project in Parliament. Not only did he discuss questions of hygiene and education in which his authority was readily acknowledged, but he was always alert and effective in the treatment of political questions of every kind. The chancellor who never cared for principle or right, but for opportunity and might only, found in

Virchow a lively critic and a frequent obstacle. There was a time when the great Bismarck challenged Virchow to fight a duel with him. The greater Virchow declined the honor of making a brute of himself, or of being made a corpse of by the vandal of blood and iron. His main adversary indeed was this man Bismarck who through thirty years of oppressive measures, dissolution of Parliaments, governing without the assent of the representatives of the people, sudden changes both of economical and ecclesiastical policy and party affiliations, brutal assaults on the rights of individuals, the freedom of the press, and the principles of the constitution that was purchased with the blood of the best part of the nation—though he succeeded in throwing into the lap of the Hohenzollern family additional large territories, and in obtaining for Germany a partial unity instead of the complete integrity we were fighting and conspiring for when we were young, has done more than any German in history to emasculate German politics and demoralize the public conscience.

Virchow, on the contrary, resisted to the utmost the lawlessness of absolutism, claimed that law should be supreme, the rights of citizens respected, the office holders know and live up to their duties, the constitution be carefully guarded and protected, and peace not rendered more expensive and exhausting than even war, through military expenses and pensions without limit, and the withdrawal of profitable labor, and enforced idleness of a million of men.

While engaged in scientific research which in universality, novelty and reforming power, are surpassed or equaled by none that are immortalized in the history of medicine, Virchow never ceased to feel that he did not only belong to theoretical and practical science, but to his people; and moreover, while his theoretical work has always a practical bearing and result, so his political and social views have a practical tendency.

He was born one of the people, and remained a friend of the people. He need not turn politician, he was and is politician born. We in this our country are in frequent danger of forgetting that at one time at least, the most intelligent, wise and pure men of this nation were our foremost politicians. Without the controlling sympathy of the very best, the Constitution of the United States would not have seen the light. We have since descended sometimes, aye many times, to the fear that only a second-rate intellect and a third-rate morality make a successful and zealous politician, losing sight of the fact that Aristotle already defined man as a "political being" and insisted upon the labor of all in the interest of all.

Virchow's example should teach, particularly young medical men, that thorough science and good citizenship do not exclude each other.

Indeed there is nobody so removed from the midst of his fellows, so absorbed in abstract studies, that has no interests in common with the rest of mankind. To prove your sympathy, what you have to spend in time, in activity, in money, should be given to the cause of the people, in the town and in the country, and particularly in critical periods of our history, like that of to-day.

The parliamentary labor performed by Virchow would easily have taken the whole time and all the efforts of a vigorous man of intellect. What was it to him who bears his eighty years lightly and has a right to ask for many more? In the preface of his "Morbidity Tumors" he says his political work was his recreation from labors more fatiguing and onerous.

His labors have been many like his honors that have been many. He has stood them all. His labors he sought, his honors came to him unsought.

There was a time when the powers politic would have been glad to destroy or to cripple him. When he proved the man of the century and the star to which thousands liked to hitch their cars, he became an unapproachable power himself. He became so big that they forgave him. Then titles would come, and places on government boards, and decorations enough to cover the liveries of a Chatham Street store. But more came to him.

There is no scientific body, medical, anthropological, ethnological, that does not feel honored by his accepting a place on its roll of honorary membership; no congress at which he is not the most honored guest; no book on any medical or anthropological topic in which he is not quoted as the main authority. And still more is due him. The history of the City of Berlin, beautiful, healthy, hygienic, could never be written without his name on every page; the history of Prussian and German politics will not be complete without it. The place of honor belongs to him, and to his friends who fought with him, and for the people. His place in science is secure, and his good citizenship will never be doubted.

His life is a great lesson to all. I see men of international fame here, of genius, covered with glory and loved and admired by all. But there is nobody who claims to equal him, or to do more than to imitate him. Now the lesson we should learn, do learn, from his example, is that no matter how high your position, how extensive your learning, how numerous your adoring pupils, you hail from the people, are one of them, part of human society, with duties of reciprocity and good citizenship. The lessons hundreds of my New York City friends should learn from what is going on this evening, is also this, that we in this town, of which we are apt to say we are so proud, and which we should teach to be proud of us, its sons and citizens, that we should learn from the presence of so many of the distinguished

men of Baltimore, Philadelphia, and Boston—as busy as any of us and as necessary to the welfare of the people—how to sacrifice an hour or a day for a demonstration as sacred as this of to-night, that is taking place in New York, in Berlin, and many other centers of science and good citizenship. Never, never was there a more urgent call on the profession and a more appropriate opportunity for an enthusiastic meeting than this anniversary of this octogenarian, greatest in science and great in citizenship. It should not be said that Boston has Bunker Hill and Harvard, Philadelphia, Federal Hall and the oldest Medical School, Baltimore has Johns Hopkins, and we should not told that New York has nothing but Wall Street and its spirit. Now, we, of this City, thank those who have come from afar to adorn this occasion by their presence and their famous names, for being with us. A similar opportunity may never arise for any of us. For history does not easily repeat itself, and the particularly grand blending of great qualities with immense powers is no creature of every decade or even every country. What Virchow was; what he is, will always be appreciated and honored. There is no ephemeral fiber in his existence. One thing we can say of him with Goethe: "He has satisfied the best of his era, he has lived for all time."

Wer hat den Besten seiner Zeit genug gethan,
Der hat gelebt für alle Zeiten.

REPORT OF THE SUMMER WORK OF THE MILK COMMISSION OF THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

BY HENRY DWIGHT CHAPIN, M.D.,
OF NEW YORK;
CHAIRMAN OF THE COMMISSION.

It may be of interest to the members of the Society to briefly rehearse the incidents leading up to the formation of a Milk Commission, before speaking of its work. A year and a half ago an evening was devoted to a discussion of the milk problem, especially in connection with large cities. A number of experts were present, including the Chief of the Dairy Division of the U. S. Department of Agriculture. The subject seemed one of such importance and aroused so much interest that the Society determined to form a commission that should study the best methods of improving the milk supply of New York. The time seemed ripe for such a movement, as the interest aroused and the success of the work have since proven. Moreover, the Medical Society of the County of New York, as the public and legal representative of the medical profession, and the guardian of the City's health, seemed the proper body to undertake such a work.

The first meeting of the Commission was devoted to a discussion of the problem and how it might best be approached. The milk that is

put into a large city must be gathered from diverse and distant sources, transported many miles, and finally distributed after many vicissitudes and changes to the customer, who himself keeps it a certain length of time, possibly under unfavorable conditions, before its use. When we consider that all this happens to a vital fluid that is unstable in its composition, that is sensitive to many unavoidable factors, such as temperature, atmospheric effects, shaking, and, above all, to dirt and dirty utensils, the complexity of the question may be appreciated. Heretofore most of the work done in a public study of a city's milk supply, has concerned itself principally with the chemical ingredients of milk, more particularly the amount of butter fat it contains.

One of the members of the Commission, having studied this subject for several years, found that the milk of New York, especially as supplied by the best dealers, runs fairly high in butter fat. While the law requires 3 per cent., an examination of over twenty samples from diverse sources showed an average of about 4 per cent. to be present, and not infrequently 5 per cent. is reached by the best dairies. Further examination showed that much was to be desired in point of cleanliness of the milk. Milk is an exceedingly good culture medium for the growth of bacteria of all kinds, and modern studies show that the presence and numbers of bacteria form a good gauge of the general condition of the milk, and the care with which it has been handled. The proper preservation of milk is also involved, as it is well known that the deterioration of milk from acid changes is due to bacterial growth. Ordinary bacteria that contaminate and grow luxuriously in milk come from the dirt that follows a careless handling of the milk, anywhere from its first production to its delivery.

It seemed well to the Commission to establish an advanced standard of clean milk for the ordinary dealer, and the index of cleanliness would be established by a bacterial count. In other words, a bacterial standard would be applied as a gauge of the condition of milk. As this work was to be entirely voluntary, as far as the dealers were concerned, it was decided to invite them to a conference with the Commission, and learn their ideas as to the feasibility of the undertaking. Accordingly, 180 invitations were sent out to dealers in Manhattan and the Bronx, this including all those of any financial importance, as shown by their commercial ratings. The meeting was held on November 16th, at the Academy of Medicine and about 50 dealers were present. They were invited to give their views freely as to whether part of their milk could not be put out according to an advanced standard for the benefit of infants, invalids, or any who desired a superior article. While many practical difficulties were urged, the general sense of the meeting seemed to be that with some extra care and expense many improvements could be made,

under proper guidance, in putting out a strictly clean milk. Encouraged by this expression of opinion, as well as by the good will and spirit shown by the dealers, the Commission determined to call a second meeting of those who were willing to have their milk examined and certified by the Commission. In the meantime, a series of suggestions, adapted from the dairy rules of the United States Department of Agriculture, were combined in a circular, together with a tentative standard adopted by the Commission. The final paragraph explains the latter as follows:

"The Milk Commission of the New York County Medical Society agrees to guarantee or certify the milk of all dealers desiring such certificate. A special label will be furnished for this purpose. The standard required to obtain this indorsement will be that the acidity must not be higher than 2 per cent., and that the milk must not contain more than 30,000 germs, or bacteria of any kind, to the cubic centimeter. This will be tentatively adopted as a standard of clean milk, as bacteria get into the milk through lack of cleanliness during the milking and careless handling of the milk after the milking, and hence is a good clue to the care bestowed in the production and general handling of milk. The milk, before testing, must be in its natural state, not having been heated and without the addition of coloring matter or preservatives. The butter fat must reach 3.5 per cent. Examination must be made by the experts retained by the Commission, with a frequency at their option, according to the season and the general condition of the milk under inspection, and at least once a month. The Commission reserves the right to change its standard, in any reasonable manner, upon due notice being given to the dealer. The expense of the examination will be met by the dealer. All reports of examinations will be strictly confidential between the Commission and the individual dealer."

About fifteen dealers attended the second meeting, which was understood to include all who were at that time willing to work with the Commission. A report was then made to the Comitia Minora, who authorized the continuance of the work along these lines.

The first examination was made March 4th, for certification, the count showing 58,500, with butter fat 3 per cent. It may be of interest here to see how the better grades of milk in New York run in bacteria. The following tests, furnished by Dr. Park, will show the amount of bacterial contamination of milk put into New York, during a winter and summer day. The first was taken November 19, 1900, being a mild winter day; temperature during the afternoon was 70 and at night 50° F. Samples of milk taken from carts, received directly from cars, gave an average temperature of about 52° F., the range being from 50 to 58° F. The number in the six samples ran as follows: 56,000; 128,000; 35,000; 256,000; 13,600; 2,880,000. For a summer day, June 29, 1901, was taken, the day temperature being 90° F. and the night temperature 78° F. Six samples taken at random show as follows: 520,000; 30,000,000; 3,530,000; 12,000,000; 216,000,000; 9,600,000.

Some idea of the extent of the bacteriological work upon milk done for the Commission, will be appreciated by stating that from March 4th to the present date, 800 separate bacterio-

logical examinations have been made. This laborious undertaking has been accomplished by Dr. Sarah Belcher, to whose zeal and enthusiasm much of the success of the work is due. The mission is also greatly indebted to Dr. Park for valuable oversight and advice, and to the Rockefeller Institute for Medical Research for its cooperation in allowing Dr. Belcher to render these services as part of the work of the Institute. Bacterial tests have been made in the Research Laboratory of the Department of Health. After visits to a number of farms and dairies, it was aimed to classify the various sources of contamination, so that each one might be separately inspected and eliminated as the source of trouble, or corrected, if found at fault. In order to reduce to practical results these bacterial researches, the following factors were considered and carefully studied:

1. Conditions of barn.
2. Condition of cows.
3. The milkers.
4. Condition of utensils.
5. Processes of cooling.
6. Transportation.
7. Condition of cans or bottles when returned from city.

1. *Conditions of Barn.*—Dirt and dust, usually so abundant in an average barn, readily get into the stream of milk or pail and form a fruitful source of bacterial contamination. The common sources of dust are the hay-loft overhead, cobwebs on walls and ceiling, loose boards, dirty windows, floors of dirt, unclean manure gutters, excessive bedding, storage of grain or feed in the barn, the rations, such as piles of hay placed near the milking and the storage of farm or other utensils in the barn, that soon become covered with dust. A dirty barn quickly raises the bacteria in milk there collected. Thus, on June 8th a cow was milked in such a barn and an examination of the milk showed 120,000 bacteria to each cubic centimeter. At the same day and hour, another cow, in apparently the same condition, was milked in the adjoining pasture, away from the dust of the barn, the milk here showing only 26,000. This experiment repeated twenty times in various localities, always gave similar results. There is invariably a large increase of bacteria in milk collected in a dirty barn. Even when a barn has been cleaned up, some source of dust may be overlooked and cause trouble. Thus, on June 15th, the premises as well as the cows were examined after the barn had been cleaned. Twelve cows standing in a row in the barn all showed a low bacterial count in the milk separately examined, except the one at the end, which showed 1,000,000. This cow stood next to a pile of dry feed, which was the only factor to account for the contamination. Here was explained an aberration in the milk of this barn that we could not at first understand, as everything had been cleaned according to directions, but this little detail overlooked. Many visits and experiments have thus shown that con-

tamination can easily be avoided if the source is discovered.

2. *Condition of Cow.*—Much dirt that gets into milk comes directly from the cow. When the cow is being milked the udder is pulled down, which loosens dandruff, hairs and dirt from all the adjacent parts. Particular sources of impurity that are apt to be overlooked in cleaning a cow are the folds between the udder and the flanks and dirt on the tail. Fifty bacterial tests were made in direct relation to the cow. The following, in which clean barns and milkers figured in connection with dirty cows, will serve as an example. Four dirty cows under above conditions gave an average count of 90,000. Four other cows from the same herd in the same barn, were carefully cleaned and then milked by the same man and gave an average count of only 2,000.

3. *The Milker.*—A fruitful source of dirt is directly attributed to the milker. The dirt may come from the hair, hands, especially when chapped and scaly, fingernails, tobacco or clothing. It was found that the milk from certain men always gave a high bacterial count that could invariably be traced to some of the aforementioned sources. It is better to have the milkers clean-shaven, and, when milking, they should be clad in white duck suits or blue overalls that are frequently washed. Young, single men make the best milkers, as they are less apt than married men to carry infection from the home. The details of their living admit of better oversight.

4. *The Utensils.*—These include pails, strainers, condition of creamery or dairy room, aerators, stationary vats, portable vats, and bottles or cans. It is sometimes difficult to find which of these factors is at fault, but the condition of the pail or strainer is very important, as when they were found at all dirty the bacterial count was always high. Thus, in a case where an ordinary pail and strainer was used the count was 80,000. On the same day, from the same barn and cows, a sterilized pail and strainer being substituted, the count dropped to 5,000. All utensils must be strictly clean, and, if possible, steamed or sterilized. It was found that cleanliness depended both upon apparatus and proper methods of cleaning. (1) In every utensil all seams must be well soldered to avoid hiding-places for traces of dirt and coagulated milk. (2) Cold or lukewarm water must first be used to avoid coagulation of particles of milk, then a cleansing with hot water, with soap or soda, and a final rinsing with hot water. After washing, cans or bottles should be turned bottom up on racks, and, if possible, steamed or sterilized. The following interesting experiment was made: Two samples were taken from the same can of milk—one from the top, showing a count of 5,000, while the one from the bottom gave 80,000. As the can had been standing in ice the lower part was cooler. The milk had also been strained and creaming had not taken place, hence the

conclusion was that the bottom of the can was not clean, and had contaminated the milk near at hand. On the whole, it was found that the simpler the pail the better; one that can be milked into quickly and cleaned easily is the best. The plain open pail gave the best results. It was found that metal strainers attached to pails were undesirable owing to difficulty in keeping them clean. Particles of dirt that might be removed later by straining are broken up by the force of the stream of milk and thus disseminated through the milk. Thus, samples from pails having strainers uniformly gave a higher bacterial count than when strainers were not used, other conditions being as nearly as possible the same. The best general strainers are absorbent cotton, cheese-cloth or Turkish toweling attached to the receiving-cans by clothes-pins. If a metal strainer is then used, it should be as simple as possible, and the wire mesh must be carefully cleaned with a stiff brush. If an aerator or vats of any kind are used, they must be cleaned and, when possible, steamed or sterilized. All joints and seams must be smooth and the faucets and pipes likewise frequently steamed or sterilized. By requiring more apparatus to be kept clean, aeration, as ordinarily practised, increases the danger of bacterial contamination. The following experiment was made on July 22d: It was found that samples of milk from pail and strainer on a certain farm averaged 3,000. After aeration by the farmer, according to his usual method, the samples gave a bacterial count of 1,404,000. Here a man with clean cows, barns and milkers, was contaminating the milk by faulty utensils. In the hands of men understanding the importance of strict cleanliness, the aerators are not a source of danger, but if the aerator is not strictly clean and in proper surroundings, the ordinary farmer may lose more than he gains by its use. Dirty ice, flies, floating dust, pipes and faucets are sources of bacterial contamination. It has been found that with a clean barn, clean cow and clean milker, the ordinary so-called "cow odor" is not present.

5. *Processes of Cooling.*—This we have found to be one of the most important factors in the production of uncontaminated milk. The whole future condition of the milk depends a good deal upon its handling during the first forty-five minutes. The sooner it is brought to a temperature at or below 45° F., at which point the growth of bacteria is greatly inhibited, the better. Many inspections of premises that were clean enough to produce a clean milk gave disappointing results when the milk was allowed to stand for more than an hour without being cooled. Where the milk was brought below 45° F. within twenty or thirty minutes, a low bacterial count *always* resulted, other conditions being right. In an experiment made July 25th, tests were made of milk collected from clean cows in a clean barn, the average count from the pail being 7,000. It was then cooled not lower than 60° F., by a slow process, and after two hours it was still standing

at 60° F., when a bacterial count gave 89,000. Five days later, the milk under apparently similar conditions was cooled down to 45° F. within ten minutes from milking, and then showed a count of only 12,000. This experiment has been repeated at six different farms, in various localities, with similar results. We have found the temperature of springs during the summer to vary from 45° to 70° F., with an average of about 55° F. Hence this method of cooling is uncertain and defective unless ice is added to the spring. Ice is always necessary to the farmer who is handling milk. When springs are used, the surroundings must be kept clean and the water uncontaminated at its source.

6. *Transportation.*—As soon as the milk is put into bottles or cans it must at once be surrounded by ice. If they are kept standing in a vat, the temperature of the water must be at least 40° F., as the milk will then be a few degrees higher. This temperature must be maintained by ice until the car is reached, if the milk is in bottles; if in cans, by means of jackets. The ordinary freight car should not be used. We have found that refrigerator cars, with doors at the end kept closed, are necessary. The cars should be loaded and unloaded from the center. The railroads can coöperate in this important work by supplying refrigerator cars and ice. When the dealer removes the milk from the car, it should be re-iced on the platform or at the depot and kept iced until delivered.

7. *Condition of Bottles When Returned.*—Much contamination can be avoided if the consumer would properly cleanse the bottles before returning them. They should be washed promptly, and never used for any other purpose. We have found cases where drugs, dirt, and even urine, have been found in them. In houses in which there are contagious diseases, no bottles should be returned, but broken and thrown away. In apartment houses, it is usually customary to collect the bottles in the basement, where they are afterward sorted out by the dealers. All kinds of impurity thus get in, making it frequently impossible to thoroughly cleanse these bottles. Thousands of bottles every year are collected by Italians from the dumps, and returned to the Bottle Association, which sorts them out, washes, and returns them to the owners.

In our inspection of creameries, it was found that thousands of Croton bugs were returned in bottles and boxes. The cans are also often returned with portions of decomposing milk remaining in them, the boxes containing the bottles may be mouldy, with parts of the wood rotten from being smeared with decomposing milk, and so forth. The railroads should be requested never to receive bottles, boxes or cans containing any fluid milk. We found that boxes and cans are often thrown off from the train by the roadside, where they may be left for hours, exposed to the sun. Utensils subjected to this treatment are only fit to be used again after sterilization,

and farmers usually have no such facilities; the creameries may have, but seldom use them.

The various data here recounted are the results of a summer study of the milk question. The information is the result of thirty visits made to various farms and dairies, some at a distance of 180 miles. Each of these visits consumed, at least, one day and some several days, so that a thorough study of the matter could be made. In the work of the Commission, the individual farm or dairy, and not the milk company, has been regarded as the unit for study and investigation. It was found necessary to work in this manner in order to get good results; in some cases, several visits were made to a given plant. As an example, a large plant was visited on August 11th; the farm was visited during milking time. The notes show that the cows were fairly clean, the barn was defective, showing hay protruding from the ceiling and covered with cobwebs and dirt. Windows dirty. The barn had a southern exposure, so that the sun increased the heat. The manure gutter was not clean; the bedding of shavings had not been removed. Various articles were stored in the barn, such as feed, farming utensils, and the clothing of the men. The cows were getting full rations of hay; the animals were hot and restless, and covered with flies, which necessitated a constant moving of the tail. No means were supplied for keeping the cow quiet during milking. The milk was strained in the barn with a wire strainer, which was bent and rusty. The dairy-room was hot and sunny, showing dust and flies. The milk was passed over an aerator, in which the temperature of the water was found to be 60° F.; the receiving vat and stationary vats were not covered, so that flies and dirt got in. The bottles were standing in ice-water at 50° F. A fair sample of milk produced under these conditions and tested at once, showed a bacterial count of 455,000.

Suggestions just described were offered, and four days later a second visit was made. As the result of specific directions, in the barn the walls were whitewashed, windows cleaned, and green shades had been placed at the windows having a southern exposure. The floor was cleaned and the bedding had been removed; the manure gutter was also clean, and land plaster had been sprinkled on the floor and manure gutter. All storage of feed and utensils had been removed. The cows were getting scant grain rations, so that there was not a large pile of hay before the animal that would fill the air with dust and induce movements of the body. The cows were well cleaned. The barn was cooler, and hence the animals were not so restless. The milk was not strained in the barn, but removed at once to the dairy. The dairy-room was clean, dark and cool, with receiving and stationary vats covered with cheese-cloth. The temperature of the water in the aerator was 40° F. The bottles were standing in ice-water at 38° F. A fair sample of milk thus produced, showed a count of only

3,600 to the cubic centimeter. This is not an exceptional condition, as a similar experience was repeated at four different times and places. This shows that an elaborate and expensive plant is not necessary to put out a clean milk. What is needed is intelligent attention to detail. A small as well as a large producer can furnish clean milk.

The following example will illustrate an experience with a small dealer, the visit being made September 5th. The cows, barn and man fairly clean. Utensils fair. No aerator and no steam. Ice was being used sparingly. Milk drawn under these conditions was placed in water at 70° F., then taken to the creamery for bottling and sent to the city. An examination here showed a count of 89,000. Various suggestions were offered, and the second visit made in eight days. Result, cows and barn well cleaned, the milk strained through absorbent cotton and cheese-cloth attached by clothes-pins to a forty-quart can, which was kept standing in a box surrounded by ice. This can had previously been steamed for twenty minutes at the creamery. The can was then taken to the creamery and placed in a vat of ice-water at a temperature of 40° F. In three hours the temperature of the milk stood at 44° F. It was then bottled and sent to the city. A sample of this milk showed a count of 5,400, as the result of the few simple changes suggested. Even a creamery is not necessary for a small dealer to put out milk up to the standard of the Commission. As an example, milk was sent from a small farmer, where cooling to 40° F. was practised within fifteen minutes after milking. This milk was sent to the city in 40-quart cans, surrounded by jackets. Samples taken on the platform in New York at 3 a. m. showed a count of only 3,000.

All the visits made to these farms were educational. The whole family, including wife and children, became interested and coöperated in the work. The attention of neighbors was also attracted to the improvements, which were often imitated, and formed the subject of evening discussion at the village grocery-store.

The Commission has no special method to advise, but asks a hearty coöperation from everyone concerned in handling the milk. The methods must vary with each plant. In general, it may be said that the following three heads include the essential conditions: (1) Strict cleanliness, which includes the barns, yards, cows, milkers and all utensils. Bacteria which get into the milk by means of dirt are thus thoroughly excluded; (2) rapid and sufficient cooling of the milk (the few bacteria that do get in are thus prevented from growing); (3) thorough icing around the milk until it reaches the consumer. The production of toxins from the growth of bacteria is thus retarded.

In every case the dealer has been able to reach the standard of the Commission without expensive apparatus, by following the indicated details. The one thing always necessary is plenty

of ice. At the same time, great labor has been done by farmers and dairymen as the result of suggestions by the Commission. New plumbing has been put in, new dairy-rooms have been built, floors have been cemented, ceilings made tight, and time and endeavor have not been spared. One dealer was so impressed with the subject of right conditions that a special new barn was put up in order to meet them. Two others are planning new barns that will ensure hygienic conditions. Even where the milk has not reached the standard for certifying, great advances have been made, and the general output improved. Eight dealers are now putting out some of their milk up to the standard of the Commission. They are as follows: Slawson Bros., Briar Cliff Farm, T. W. Decker & Sons, Mrs. Van Zandt, Sheffield Farms, Mr. Tuthill, Harlem, Century Co., Locust Farms, and Mr. Keller. Many others are making changes and applying for a certification, who will doubtless pass the test of the Commission.

In spite of the summer having been the hottest in thirty-one years, all those who have been certified have kept up to the standard under most trying conditions. The thanks of the Commission and of the community at large, are due to these dealers, who have shown great interest in this work and have not spared labor or sacrifice in keeping up to the standard. The milk of each dealer has been examined about twice a month during the summer, and labels given that can be placed in the mouth of the bottle, as a proof of certification. The bottle for examination is collected from the dealer in the morning, placed in a bag surrounded by ice, and at once taken to the laboratory. If the milk shows a test close to the limit established by the Commission, a second examination is made in a few days. In the meantime, an effort is made to find out the source of trouble, in order that it may be corrected.

The Commission feel gratified at the interest excited in this movement on the part of the farmers, milk-dealers, the daily press, and the dairy journals. It is hoped by this movement to inaugurate a general improvement in the production and handling of milk destined for large cities.

Commission. { HENRY DWIGHT CHAPIN, M.D.
WALTER LESTER CARR, M.D.
ABRAHAM JACOBI, M.D.
JOSEPH E. WINTERS, M.D.

Virchow Celebration in Chicago.—The German-American Medical Society celebrated the eightieth birthday of Professor Virchow in the new banquet hall of the Bismarck October 12th. Seventy physicians sat down to the feast. Dr. Gustav Fuetterer acted as toastmaster. The committee was composed of Dr. Saurenhaus, Dr. Heyn, and Dr. Gustav Kollischer. Dr. G. Frank Lydston and Dr. Norval H. Pierce, guests of the Society, made speeches.

MEDICAL PROGRESS.

Diseases of the Esophagus and Esophagoscopy.—The possibility of examining the esophagus visually throughout its entire length makes it comparatively easy, to distinguish anatomical alterations from nervous and neuromuscular conditions, nevertheless esophagoscopy is rarely utilized to-day, even by specialists, because of its supposed difficulties and dangers. The technic of this procedure is fully described by F. SCHILLING (*Wiener med. Bl.*, Sept. 5, 1901). Ordinarily the esophageal mucous membrane appears pale; in inflammatory conditions it is red and its blood-vessels are visible. Stricture is due to compression from without, or to tumors, infiltrations or scars developing in or springing from a wall of the canal. Cicatricial contraction is usually a slow process, even when due to chemical irritation by acids or alkalis. Systematic dilatation may lead to temporary relief or even to permanent cure of stenosis. Esophagismus is most frequent in hysterical subjects; the variability of the stenosis and the presence of other stigmata furnish the diagnosis. Polypi, if present, are easily removed. Thrush invades the esophagus in marantic children and weak adults. Catarrhal ulcers yield readily to applications of silver nitrate solutions; syphilitic ulcers demand the usual specific treatment. Diverticula may be suspected when patients complain of pain after eating; the pain is usually in the lower sternal region. Occasionally masses of undigested food are discharged, with alkaline mucous and an absence of free hydrochloric acid. Esophageal dilatation is usually an accompaniment of catarrh or stenosis; the esophagoscope shows a lax mucous membrane lying in folds, while the end of the tube can be moved about in various directions. Carcinoma and actinomycosis are accompanied by symptoms of stenosis, marasmus, and fetid odor are late symptoms, while the esophagoscopy permits a diagnosis to be made in the stage of early infiltration. Varicosities occur in hepatic cirrhosis and disturbances of the portal circulation and may result in fatal hemorrhages. When foreign bodies are present in the esophagus, the use of the esophagoscope will often suggest means for their removal without resort to surgical operation. Emetics were formerly employed to further the discharge of foreign bodies, but they are uncertain at best and where sharp objects are present they may cause serious mischief.

Tuberculosis of Female Genitals.—In the presence of extensive ascites which recurred quickly after tapping, unfavorable surroundings, the lymphatic constitution of the patient, the lack of means, the initiation of morbid symptoms by an attack of measles, and an afternoon fever, J. L. DUENAS (*Archives of Pediatrics*, Oct., 1901) performed laparotomy. He found both ovaries studded with miliary tubercles, and in the left ovary four tuberculous cavities. The

right Fallopian tube was filled with cheesy matter, the mucous membrane having been destroyed. The adjacent peritoneum also bore tubercles, but in no part was there fibrinous exudation, purulent collection or adhesions. The uterus and appendages were removed, the peritoneum wiped dry, and the patient is now enjoying good health. The author concludes that in the absence of a bacillary purulent vaginal discharge, primary tuberculosis of the female genital tract cannot be detected.

Clinical Form of Acute Malignant Primitive Endocarditis.—The term *febris pallida* is proposed by L. REVILLIOD (*Revue Méd.*, Sept. 20, 1901) to indicate what he regards as a definitely characterized type of vegetative endocarditis, due to staphylococcus albus. The principal symptoms are (1) a fever which oscillates between 38° and 38.6° C., rarely rising above 39° C.; this fever is extremely obstinate, but is accompanied by almost no subjective symptoms; (2) a pallor of the skin which persists even during the febrile exacerbations. For a considerable period the various bodily functions are normal; the general health is practically unaffected. Then there follows a period of lancinating pains referred to the shoulders and down the arms, moderate anhelation without marked dyspnea; enlargement of the spleen; diminution of the urine, which becomes charged with uric acid and urates. Stethoscopic signs are noticed during this stage. In the terminal period cachexia is marked; there is marked general weakness, emaciation, serous effusion in the thoracic cavity. The disease may last four months or more. In the presence of such a clinical picture, after excluding other diseases and especially discrete miliary tuberculosis, the clinician should suspect this form of infectious endocarditis, which is as malignant in reality as it is benign in appearance.

Infectious Pneumonia.—Pneumonia is not a specific disease, writes W. S. MUIR (*Montreal Med. Jour.*, Sept., 1901), and may be caused by other organisms, but in typical croupous pneumonia the pneumococcus is always present. This organism has also been found in bronchopneumonia, in hypostatic pneumonia associated with pyogenic germs, in influenza pneumonia with the influenza bacillus, in typhoid pneumonia with the typhoid bacillus and even with the colon bacillus, and occasionally in bronchopneumonia with the diphtheria bacillus. The microbe can exist harmlessly in the sputum, but, like the streptococcus, it may become pathogenic and ubiquitous. It has been found in otitis media, meningitis, ulcerative endocarditis, pericarditis, empyema, etc. Rabbits and white mice are very susceptible to it. To find it, stain a cover-glass preparation for 5 to 10 minutes in anilin gentian-violet, drain off and immerse for one-half to two minutes in iodine 1, potassium iodide 2, and water 300 parts. Wash in alcohol till no more color runs off the cover slip, wash in water, dry, and mount.

THE MEDICAL NEWS.

A WEEKLY JOURNAL
OF MEDICAL SCIENCE.

COMMUNICATIONS in the form of Scientific Articles, Clinical Memoranda, Correspondence, or News Items of interest to the profession are invited from all parts of the world. Reprints to the number of 50 of original articles contributed exclusively to the MEDICAL NEWS will be furnished without charge if the request therefor accompanies the manuscript. When necessary to elucidate the text illustrations will be engraved from drawings or photographs furnished by the author. Manuscript should be typewritten.

SMITH ELY JELLIFFE, A.M., M.D., Ph.D., Editor.
No. 111 FIFTH AVENUE, NEW YORK.

Subscription Price, including postage in U. S. and Canada

PER ANNUM IN ADVANCE	\$4.00
SINGLE COPIES10
WITH THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, PER ANNUM	7.50

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in registered letters.

LEA BROTHERS & CO.,

No. 111 FIFTH AVENUE (corner of 18th St.), NEW YORK,
AND NOS. 706, 708 & 710 SANSON ST., PHILADELPHIA.

SATURDAY, OCTOBER 19, 1901.

SILENT?

SILENCE may mean reserve, it may mean chagrin, it may mean confusion. The gentlemen who did not hesitate to criticise the President's physicians and to offer *post hoc* suggestions as to what might have been done, have kept strangely silent for the last fortnight. There have been no further confidences to the daily press concerning errors in judgment, nor slurs upon the attending surgeons, neither have there been any words of apology, nor any signs of appreciation that their attacks were uncalled for and out of keeping with the dignity of the profession.

It is needless to say that the physicians of the State and country have stood by the President's physicians and that they in turn have appreciated the united spirit of the medical press in condemning those who so unexpectedly and unwarrantably heaped criticisms upon them.

Before the evidence was all in if praise was not forthcoming, silence would have been the more noble part, but since the oracles were so outspoken with such little data, why should they preserve silence now in the presence of the full report?

THE FINAL VERDICT.

THE official account of President McKinley's case, including the autopsy, which we print on another page, comes to complete the story which has already been told in part in our earlier numbers.

The clinical report tells its own story. The pathological findings may be briefly summarized as follows: The two wounds in the stomach had been and remained effectually closed by suture, but about each of these was an area of necrosis. Behind the stomach, along the course of the bullet in the posterior wall of the trunk which extended to the upper end of the left kidney there was extensive necrosis of the abundant fat and of the central portion of the pancreas, and this latter organ showed throughout numerous small hemorrhages and areas of gray softening. There was no peritonitis and no bacteria were found in the wall of the necrotic track in the back or in the liquid which bathed it. The pancreas had not been wounded by the bullet, and there was no evidence that pancreatic juice had escaped and come in contact with the injured parts. The injuries do not specify the cause of death, but express the opinion that the changes found in the pancreas were an important factor therein.

With regard to the operation the only question that could fairly be raised is as to the correctness of the decision not to provide drainage through the operation wound, and it seems to us perfectly clear that such drainage could have served no useful purpose and that the determination not to incur its risks was wisely taken. The continued presence of uninfected exudate, which might have been removed by such drainage, could have played no important part in bringing about the fatal result, and the formation of the two sloughs in the wall of the stomach, which apparently would have separated in a short time, if the patient had lived long enough, and caused a promptly fatal peritonitis, would not have been prevented by drainage, but, on the contrary, might have been hastened thereby. Posterior drainage, through the back, was of course wholly out of the question on operative and anatomical grounds.

As to the decision to make no further search for the bullet, there can be no question of its propriety. It was imposed by the operative conditions. The thickness of the anterior abdominal wall, and the evidences of increasing and dangerous shock during the operation—was

supported by universal clinical experience of the harmlessness of such foreign bodies, and was confirmed by the findings of the autopsy which gave no indication that the continuing presence of the bullet had anything whatever to do with the necrotic process along its track or the changes in the pancreas, and furthermore showed that such a search would have been fruitless. The failure to find it at the autopsy is easily explained by the enormous (the term used by the pathologist) deposit of fat into which it was traced and within which it was doubtless imbedded. Even supposing that its position could have been determined at any time, at the operation or later, by the use of the X-rays, can any one think that advantageous use could have been made of the information? Consideration of the operative conditions involved can give but one answer.

While it is to be regretted that the cause of death remains obscure and perhaps undeterminable, we are glad to believe that the official report confirms the opinion of the propriety and skilfulness of the treatment expressed by us in our issue of September 21st, and justifies us in saying that it is a clear and full story of a skilful, judicious operation which failed to save life through no error or oversight but solely because of conditions which could not have been prevented or remedied.

A TRIBUTE TO OLD AGE.

WHEN Cicero wrote "Cato the Elder," he chose this man "who had been old so long, and in his age had surpassed all others in vigor," to be the mouthpiece of his philosophy. It might have been Virchow, the octogenarian scientist, uttering these two thousand year old words.

"One who lives absorbed in his work does not very much notice when old age creeps upon him." "Old age must be resisted and its faults counterbalanced by diligence. It must be fought against as one would fight against disease. Nor must we aid the body alone, but the mind and soul much more, for these also, unless we feed them as we pour oil into a lamp, will be extinguished by old age."

This is the spirit that makes men immortal, and it is this indomitable, indefatigable energy, this twenty-century-old pluck, this youth in old age, that has made Rudolf Virchow the hero as well as the father of German medical science.

Simultaneously, as he approached the portal of his eightieth year, did his pupils, friends and admirers in both continents, rise to their feet to do him honor.

A dinner given at Sherry's on the evening of Saturday, October 12th, was the form in which American physicians celebrated his birthday. And to it came the members of the New York Academy of Medicine, and men of prominence from other cities, men who realized that their knowledge of medical science was based on the foundations that Virchow had been hewing and building through sixty years of tremendous work.

There is perhaps no greater thrill of pleasure than that which comes with the disinterested recognition of the presence of greatness. The societies in New York, Paris, Vienna, Chicago and St. Petersburg, where his birthday was celebrated, felt a sense of envy of their confrères in Berlin who had the privilege of entertaining the person of their noble guest. But though his physical presence was lacking, there were those in New York who successfully conjured the spirit of the master to the birthday board.

Dr. Osler, Dr. Welch, Dr. A. H. Smith, and Dr. Jacobi, all personal friends of Prof. Virchow, gave of their intimate knowledge of his scientific work, his life and character, to those who knew him only through his writing.

The fact that Prof. Virchow's work and fame were to most American physicians signalized by the old modest green pamphlet that has for over fifty years been edited by him, gave Dr. Dana a happy thought, and the menu which he devised had for its cover a facsimile of the *Archiv für pathologische Anatomie und Physiologie, und für klinische Medizin*. Within were two beautifully executed portraits of Prof. Virchow, one reproduced from a photograph given to Dr. A. H. Smith in 1859, and the other taken in old age.

TRAUMATIC NECROSIS OF THE PANCREAS.

SINCE the Buffalo tragedy the subject of traumatism of the pancreas, with attendant necrosis, has had more than a merely clinical and pathological interest for members of the medical profession in America. In a certain sense the subject has become one for popular as well as professional study; at all events while the lay press may not have succeeded in imparting to the popular mind a clear knowledge and understanding of pancreatic necrosis, it has aroused so widespread an interest in the matter that the profession will welcome every relevant clinical report. Not every physician can hope to cite cases of pancreatic necrosis from his own practice, and

yet every one is expected by his patients and friends to have an expert knowledge of the subject.

While serious trauma of the pancreas usually is followed by a speedy fatal termination, exceptions to the rule are to be found in literature. Hahn reported a case of bullet-wound of the liver and pancreas, in which the patient recovered, notwithstanding complete pancreatic perforation, presumably with escape of pancreatic secretion into the surrounding tissues. Gessner reported six cases of trauma resulting in pancreatic necrosis.

As to the direct cause of the necrosis several suppositions are admissible. It may be due to escape of pancreatic secretion, with resulting action on the pancreatic tissues and on the intra-abdominal fat; this theory is supported by the fact that necrosis is most frequently observed in the immediate neighborhood of the injury to the gland. Another view presents the necrosis as the direct or primary result of the trauma itself; while a third regards the necrosis as due to bacterial invasion of an injured area.

An interesting case of traumatic necrosis of the pancreas is reported by F. Selberg in the *Berliner klinische Wochenschrift* of Sept. 9, 1901. The patient was kicked by a horse, receiving the blow in the epigastric region through thick clothing which prevented any injury to the skin. He complained first of pain and tenderness in the epigastrium. There was no rise of temperature, no increase of pulse-rate, no abnormal cardiac or pulmonary sign, no swelling, no vomiting. Gradually dyspnea set in, and later examination showed slight swelling, dullness over the lower part of the left lung which afterward changed to flatness, diminished respiratory murmur over the flat thoracic area, abdominal distention with tympanitic percussion note except over the dependent portions of the abdomen, where dull percussion note and slight fluctuation were obtained. The highest temperature recorded in this case was 36.7° C. Two liters of sero-hemorrhagic fluid were removed by puncture and aspiration from the left pleural cavity 19 days after the receipt of the injury; the following day the patient died, attempts at stimulation proving utterly useless. On opening the peritoneal cavity it was found to contain a fibrino-purulent exudate, with intestinal coils matted together. Necrotic areas were found in the great omentum. The head of the pancreas was necrotic, soft and friable. The remainder of

the pancreas was hemorrhagic, infiltrated and discolored.

While but few microscopical findings in cases of traumatic pancreatic necrosis have previously been reported, the examination made in this case shows no noteworthy departure from the conditions which are known to exist in non-traumatic cases. Pancreatic disease was not diagnosed during life. The pleural exudate was revealed by the physical signs, and aside from this the case was thought to be one of perforative peritonitis.

THE NEW YORK STATE MEDICAL SOCIETY MEETING.

THE first semi-annual meeting of the Medical Society of the State of New York held during the past week here in New York city, a report of whose proceedings will be found in our columns, must have proved a very gratifying success to its projectors. It undoubtedly drew crowded houses to its sessions and reawakened lively interest in the society in New York city. The experiment of a semi-annual meeting in this city in addition to the regular annual meeting in Albany deserves to become a permanent feature. There was but one fault with the meeting; so many papers were offered that there was not due time for their presentation and consideration. This is the recurring complaint at all medical meetings and shows the absolute necessity for some method of selection of papers before all meetings.

The reception given by the New York County Medical Society to the visitors was as enthusiastic a success as any medical event of recent years. The scientific features of this session deserve wide attention from the profession. The symposium on Diseases of the Liver and Bile Passages on Tuesday night brought out the recent views on the principal details of these frequently seen conditions that are at present at the very acme of interest all over the medical world. The discussion on pneumonia initiated by Dr. J. C. Wilson, of Philadelphia was not encouraging from the standpoint of new therapeutic suggestions but it made clear the present position of conservative medical opinion with regard to the failure of supposed specific medication and the routine of treatment that seems most rational to employ. Besides these the papers on tuberculosis and Dr. Howard Kelly's demonstrations of the vascular supply to the kidney were contribu-

tions to medical practice and science that deserve widespread attention.

We welcome the New York State Medical Society and congratulate its officers on the high standard they have set.

THE PATHOLOGICAL INSTITUTE.

THE correlation of sciences in the study of the sciences was the fundamental conception of the old Pathological Institute, and an excellent controlling spirit it is. We are glad to see that the new Institute is to represent this spirit in even a wider sense by the appointment by Commissioner Peterson of several scientists of world-wide reputation.

The Advisory Board just appointed would make an ornament to any institution and New York State is to be congratulated on having a leader who is capable of gaining the coöperation and support of such men.

ECHOES AND NEWS.

NEW YORK.

Appointment of an Advisory Board for the Pathological Institute of the State Hospitals.

—The plan of reorganization of the Pathological Institute of the New York State Hospitals for the Insane undertaken by the State Commission in Lunacy is gradually taking shape. In order to add to its efficiency a great deal of careful thought was given to the matter of the appointment of an Advisory Board, whose duty it should be to aid in the development of the Institute and the carrying on of its work on broad lines and to assist the new Director soon to be appointed by its valuable advice. It is the aim of the reorganized Institute to carry on work in the sciences correlated with psychiatry much according to the original scheme, but with a few modifications calculated to meet more immediately the needs of the hospitals as expressed by the superintendents and to meet some of the criticisms of the former plan. Original research in the various sciences having a bearing upon the subject of insanity will go on as before, but in addition thereto the Institute will be utilized to give special instruction in clinical psychiatry, as well as methods of scientific research to the physicians on the staffs of the hospitals for the insane and to young men about to take up an asylum career. In order to obtain this clinical experience the Institution needs to be combined with a hospital for the insane, and to bring this about it is for the present to be connected with one of the asylums on Ward's Island, and until such time as a reception hospital for the insane can be established in Manhattan.

In selecting the members of the Advisory Board, the Lunacy Commission deemed it ex-

pedient to have the three University Medical Schools of New York City represented, viz.: Columbia, Cornell and Bellevue-University. Furthermore it was considered to accord to the chief sciences correlated with psychiatry representation upon the Advisory Board. These sciences are pathology, chemistry, psychology and general biology. Inasmuch as the Pathological Institute was created for the utilization of the material of all the State hospitals, and for the purpose of raising the standard of scientific study, treatment and care of the insane under State care, it was thought best that these institutions should also have a voice upon the Advisory Board. A member to represent general clinical medicine and neurology was likewise selected.

Accordingly the Commission in Lunacy has established an Advisory Board consisting of the following gentlemen: Dr. J. McKeen Cattell, Professor of Psychology, Columbia University; James Ewing, Professor of Pathology, Medical Department of Cornell University; Dr. Christian A. Herter, Professor of Pathological Chemistry, Bellevue and University Medical College; Hermon C. Bumpus, Assistant to the President of the American Museum of Natural History, to represent the department of General Biology; Dr. Henry Hun, Professor of the Diseases of the Nervous System, Albany Medical College, to represent Neurology and General Clinical Medicine; Dr. Charles W. Pilgrim, Superintendent of the Hudson River State Hospital, at Poughkeepsie, and Dr. A. E. Macdonald, Superintendent of the Manhattan State Hospital, East, to represent the State Hospitals; Dr. Frederick Peterson, President of the Lunacy Commission, a member ex-officio.

All of the appointments to the Advisory Board are permanent except two. The two superintendents of asylums on the Board were elected by the fourteen asylum superintendents of the State at a meeting held in Buffalo, September 28th, for a term of two years only, thus permitting all of the asylums to be represented in rotation on the Board.

All of the gentlemen selected have accepted their appointments. They serve the State without charge, willingly giving their time and services free for the cause of science and to advance the interests of the insane.

From some of the letters of acceptance the following quotations may be made to observe the spirit in which the appointments have been accepted:

Prof. Cattell writes: "I shall be glad to be a member of the Advisory Board of the Pathological Institute. I have followed the history of the Institute with some care and am much interested in its reorganization on lines that will both advance science and be of use to the hospitals for the insane of the State."

Prof. Ewing writes: "I have always felt an active interest in the permanent success of this institution, and will serve you in any way likely to further that end."

Prof. Herter writes: "I am confident that a board constituted as you propose will prove distinctly helpful in selecting the most promising paths of research. It will be a pleasure to me to do whatever I can to further the usefulness and success of the reconstructed Institute."

Prof. Hun writes: "I have always taken a great interest in the Pathological Institute and I very gladly accept the position which you offer. I stand ready at all times to do all in my power to further the interests of the Institute and its scientific work."

Manhattan Dermatological Society.—A regular monthly meeting of the Manhattan Dermatological Society was held on Friday evening, October 4, 1901, at the residence of Dr. I. P. Obendorfer, No. 1037 Lexington avenue, with Dr. Wm. S. Gottheil in the chair.

Dr. Wm. S. Gottheil presented a child of seven months with *favus corporis*. The interscapular region showed three patches which were typical of the disease. No history of infection could be elicited, nor were any subjective symptoms present.

Dr. E. L. Cocks showed a baby of two months with redness and scaliness of the lower abdomen, buttocks, inner surfaces of the thighs and part of the legs. The case was presented for opinions as to its *syphilitic nature*.

Dr. Kinch inclines toward a diagnosis of syphilis on account of the marked involvement of the lower extremities. Dr. R. Abrahams calls it *eczema intertrigo*. The absence of hepatic enlargement, snuffles and fissures at the angles of the mouth speak against syphilis. Dr. J. Sobel terms these cases *dermatitis erythematosus eczematoides*. A case of syphilis with such involvement of the buttocks would show rhagades of the anus and mouth. Dr. Oberndorfer considers it an intertrigo with more intense manifestations than usual. Drs. Bleiman and Geyser exclude syphilis and call it intertrigo. Dr. L. Weiss says the case is typical of seborrheal *eczema* of the newborn, the lesions in the inguinal region and inner surfaces of the thighs being modified by moisture. Dr. Gottheil calls it seborrheal *eczema*. Dr. E. L. Cocks in closing stated that he did not regard it as syphilis, but thought that it presented features worthy of differentiation.

Dr. E. L. Cocks presented *three cases of syphilis* in a mother and two children, the former being the primary source of infection. Seven months ago the mother presented herself with a chancre, mucous patches, iritis and a syphilide. In spite of specific directions as to the dangers and consequences of infection, the first child, a girl of 13 years, had a chancre of the right tonsil three months after, and the second girl a syphilide with specific pharyngitis, four months after. Dr. Sobel remarked that cases of family syphilis were not very uncommon, and to put it mildly were deplorable. Dr. Weiss thought that such cases should urge one to have syphilis classified by the Board of Health as a reportable disease. Dr. Gottheil stated that infection through

the mouth is not at all uncommon and often explains many obscure and mysterious cases.

Dr. R. Abrahams presented a woman with a *parasitic eczema* of ten years' duration, involving the abdomen and thighs. The flexor surfaces of the arms showed a papular *eczema* very suggestive of lichen planus. Dr. Kinch thinks it a combination of *eczema* and lichen planus. Dr. Bleiman calls the arm lesions lichen and the genitals and thighs *eczema marginatum*. Dr. Oberndorfer considers it an atypical psoriasis. Dr. J. Sobel calls the condition *eczema*, mycotic on the abdomen and thighs, papular on the forearms. The arms show the retrogressive *eczema papules* which, as Gottheil states, so closely resemble lichen. Dr. L. Weiss considers it *eczema marginatum* aggravated by acute attacks. Dr. E. L. Cocks would diagnose *eczema* and lichen. Dr. Gottheil considers it a mycotic *eczema*. Dr. Bleiman presented a woman with *vittiligo* of the arms, face, and body.

Dr. J. P. Oberndorfer showed a man with *gumma* of the *glans penis* to demonstrate how difficult at times differentiation from chancreoid proves. No history of previous syphilitic infection could be elicited.

Dr. J. Sobel presented a man with *eczema marginatum* of the suprapubic region and thigh.

Dr. R. Abrahams showed a girl of 13 years with *herpes tonsurans maculosus et squamosus*. The body presented scaly patches of various shapes and sizes. Drs. Kinch, Cocks, Oberndorfer, Geyser, Weiss and Gottheil consider it seborrheal *eczema*. Dr. Bleiman remarked that the involvement of the scalp, forehead and back of the ears spoke for seborrheal *eczema*. Dr. J. Sobel stated that against pityriasis rosea might be mentioned, the thickness of the scales, their oiliness, the infiltration of the skin and the greater elevation of the lesions.

Dr. R. Abrahams presented a child with a *chronic papular eczema* of the body.

Dr. Oberndorfer would call it lichen acutissimus, Dr. Bleiman keratosis follicularis, Dr. Gottheil congenital follicular keratosis, Dr. Cocks seborrheal dermatitis.

Rockefeller Research Plan.—Plans for the work to be taken up this winter by the Rockefeller Institute for Medical Research, which was founded several months ago by John D. Rockefeller with a fund to begin work with of \$200,000, were considered by the Board of Directors at a meeting held Saturday afternoon in this city, and at which all of the men whom Mr. Rockefeller selected to manage the institution were present. It was the second quarterly meeting to be held since the founding of the institute. At it, according to Dr. Holt, who was authorized to give out an outline of the plans decided upon, it was decided to begin the work of research in earnest this winter, and to that end nineteen fellowships were established. The persons having these fellowships will work in laboratories in Chicago, Montreal, Philadelphia, Ann Arbor, Boston, Baltimore and other cities. Only one

is to work abroad and the person to do this has already been selected and is on his way to his new field of labors, which will be in Prof. Ehrlich's laboratory in Germany. This worker is Dr. Marshall, a pupil of Dr. Welch's. Names of the others who will engage in the work of research have not yet been given out, as only a few have been selected. The men who so far have been asked to work for the institute have been engaged for some time in laboratories, and it was by writing to those laboratories and seeking their best workers that the selections were made. This will be done in the case of all the others to be appointed. All the fellowships are for one year, during which time every person holding one will be asked to do original investigating and submit a report of his work to the board, which probably will have it published if it is found to be of value to the medical profession. The investigation of the milk supply of this city, which was the first work to be taken up by the institute, and which went on during the summer, has been completed and a report of it is already in the hands of the directors. Dr. Holt said that possibly it may be made public at some future time, but not at present. The investigation was an exhaustive one, three workers being employed, one to inspect dairies and the transportation; another to do bacteriological work and the third to examine the supply in institutions in relation to the health of the inmates.

Another investigation was also started in the summer, but has not yet been concluded. It was of the germ which causes outbreaks of dysentery and was made by Dr. Flexner of the University of Pennsylvania. Dr. Flexner has already visited two places where such an outbreak occurred, New Haven and Lancaster, Pa., but he has not yet submitted his report. The work to be taken up this winter, Dr. Holt said, would be more in relation to forms of tuberculosis and typhoid fever. It is understood that the work will take on a much more extensive scope next year, but at this time nothing more will be made public.

PHILADELPHIA.

Death of Dr. Everhart.—Dr. John B. Everhart, a prominent physician of West Chester, died October 8th in his seventy-fifth year. He was a graduate of Princeton and of the University of Pennsylvania and served three years as surgeon in the Civil War.

Dr. Kelly Visits Philadelphia.—Dr. Howard A. Kelly of Baltimore lectured before the Y. W. C. A. of the Woman's Medical College October 8th on "Bible Studies." Preceding the lecture Dr. Kelly was the guest of honor at a dinner given by the Faculty of the College and following it a reception was held at the headquarters of the Association.

Changes in Wills Eye Hospital Staff.—After a service of nearly thirty years as attending surgeon at Wills Eye Hospital, Dr. William F. Norris has resigned the position and will become consulting surgeon. Dr. George C. Har-

lan has been appointed consulting surgeon and Dr. Paul J. Pontin's assistant surgeon.

Dresses Must Not Be Long.—The Board of Health of Pottsville has ordered all women to wear short dresses in order to avoid gathering disease germs in the street and carrying them to their homes. The collection of cigar stumps on the streets is also prohibited.

Split in Hospital Board.—As a result of the election of superintending physician of the Danville Hospital for the Insane, four of the trustees, Drs. Harvey and Detwiler and Messrs. Scarlet and Holloway, tendered their resignations to Governor Stone. They inform the Governor that it is their belief that "the care and treatment of the insane and management of the institution is not what medical skill and modern treatment demand." Dr. H. B. Meredith was reelected superintending physician for ten years.

Officers of Pathological Society.—At the meeting of the Philadelphia Pathological Society October 10th the following officers were elected for the ensuing year: President, Dr. Charles W. Burr; Secretary, Dr. J. D. Steele; Treasurer, Dr. T. S. Westcott; Recorder, Dr. David Riesman.

Smallpox.—Sixty new cases were reported for the week ending October 12th, an increase of 20 over the previous week, but only 2 deaths occurred. The Municipal Hospital smallpox ward is overcrowded and will be until the temporary structure for these cases is completed next week.

The Aspect of Disease as Seen in Arctic Alaska.—Dr. Ernest W. Kelsey read an instructive paper on the above subject at the meeting of the County Medical Society October 9th, his observations being based on a stay of two summers and one winter in that region. Physicians there must be their own nurse, apothecary, anesthetist, etc., in most instances. Trained nurses command \$15 a day and upward. The diseases most prevalent are cerebrospinal meningitis, scurvy, typhoid fever, and neuralgia, the natives, however, being singularly free from scurvy and meningitis. The typhoid fever cases show a tendency toward absence of rash and low temperatures. Traces of scorbutus are often present. The cerebral form is rampant and difficult to differentiate from cerebrospinal meningitis. Hemorrhages followed by perforation are common. The fever is often intermittent in type and quinine is very valuable in such cases. Rheumatism is usually neuralgic in type, the inflammatory form occurring only in the summer time. The heart is rarely attacked. Pneumonia is met with during the spring and summer months, but rarely in cold weather. Nervous diseases are of two types—structural and psychic. The free use of alcohol has much to do with these lesions. When alcohol cannot be obtained all substitutes are used—wood spirit, tabasco sauce, red ink, etc. Insanity is com-

mon. Diseases prevalent among the natives are chronic bronchitis, consumption, smallpox, and pneumonia in the rainy season.

Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about One Hundred and Eighty Dollars, will be made on July 14, 1902, provided that an Essay deemed by the Committee of Award to be worthy of the Prize shall have been offered. Essays intended for competition may be upon any subject in Medicine, but cannot have been published, and must be received by the Secretary of the College on or before May 1, 1902. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award.

The Alvarenga Prize for 1901 has been awarded to Dr. George W. Crile, of Cleveland, Ohio, for his Essay entitled: "An Experimental and Clinical Research into Certain Problems Relating to Surgical Operations."

CHICAGO.

Resolutions on the Death of Dr. Jones.—At a meeting of the Chicago Ophthalmological and Otolological Society, held October 8, 1901, the following resolutions were adopted: *Resolved*, That the members of this Society having heard with deep regret of the recent demise of their colleague, Dr. S. J. Jones, desire herewith to express their appreciation of his faithful service in the medical profession of this city, and to testify to the valuable contributions he has made to the subject of ophthalmology. *Resolved*, that a copy of these resolutions be sent to his family.

Resignation of Dr. Dudley.—Dr. C. C. Dudley has resigned the chair of Gynecology at the Northwestern University Medical School, a position which he has filled for many years.

GENERAL.

Laying of Corner-Stone at the University of Michigan.—This ceremony was performed Tuesday, October 15, 1901. An address was delivered by John A. McCorkle, M.D., class of 1873, of Brooklyn. Also an address by Leartus Connor, M.D., of Detroit, president of the Society, with introductory remarks by Honorable Herman Kiefer, chairman of the Committee on the Department of Medicine and Surgery. Remarks were made by President James B. Angell, followed by an address by J. George Adami, M.D., of Montreal.

The Canteen in Its Sanitary Relations.—At

the recent meeting of the American Public Health Association at Buffalo the regrettable results of the recent legislation respecting the Army canteen was a prominent topic under consideration. All the Army medical officers present gave strong testimony as to the harmful working of the system established in place of the former canteen, and resolutions deprecating the change were passed unanimously.

Hospital Staff Resigns at New Rochelle.—The physicians comprising the medical staff of the New Rochelle Hospital met October 14th and adopted a resolution notifying the Board of Governors of the institution that after November 1st next they would no longer serve as the physicians at the hospital, and that this action would not be reconsidered unless the board rescinded a recently passed resolution which is distasteful to the doctors. Among the members of the medical staff are Dr. T. P. Berens, Dr. Z. Edwards Lewis, Dr. C. Nelson Raymond, and Dr. L. J. Roberts.

Virchow Dinner Celebration in Berlin.—Prominent men of science from all parts of the world assembled in Berlin, October 12th, to join in the celebration of the eightieth birthday of Professor Virchow. The newspapers devote columns to his eulogy, reviews of his life, instances of his remarkable vitality and incessant work, referring to the fact that he only allows himself four or five hours' sleep daily.

Count von Posadowsky-Wehner, Secretary of the Imperial Home Office; Baron von Richtigshofen, the Secretary for Foreign Affairs; Herr Thielen, the Minister of Public Works; Herr Moeller, the Minister of Commerce, and other distinguished officials assisted at the ceremonies, which took place at the Pathological Institute. Besides the entire fraternity of medicine of Berlin, there were present deputations from all the German universities. Professor Virchow on entering the hall was warmly greeted. He made a speech which lasted nearly two hours. It was mostly devoted to the development of pathological science. Surgeon-General Schaper then tendered the congratulations. He referred to the gratitude of humanity for the blessings bestowed on the world at large by him whose motto had always been "*Salus populi suprema lex esto*" (Let the people's safety be the supreme law).

The chief function of the evening was a banquet given in the lobby of the lower house of the Prussian Diet, which was attended by a gathering equally as distinguished as that present at the ceremonies during the day. Professor Waldeyer, secretary of the Academy of Science, presented to Professor Virchow 50,000 marks, subscribed by the medical men of Germany to increase the endowment of the Virchow Institute. Dr. Studt announced that Emperor William had conferred upon Professor Virchow the great gold medal for science, and read the Emperor's letter accompanying the decoration, which said in part: "You have broken new ground and laid fresh foundations for medical science. Your name is

written boldly upon the tablets of history, and is honored far beyond the borders of the Fatherland." The King of Italy sent Professor Virchow a gold medallion bearing a portrait of himself.

During the afternoon three Americans, Messrs. Honan, Dickie and Burtis, called on Professor Virchow and, after tendering their congratulations interrogated him as to when he would visit the United States. In reply to their inquiries, the professor said he would make the visit when he was ninety years old.

The issue of October 12th of the *Berliner klinische Wochenschrift* is given over entirely to the Virchow celebration.

SOCIETY PROCEEDINGS.

THE SEMI-ANNUAL MEETING OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Held October 15 and 16, 1901, at the New York Academy of Medicine.

FIRST DAY—OCTOBER 15TH.

Pathogenesis of Narcolepsy.—Dr. Heinrich Stern of New York gave the details of a case of pathological sleepiness with his investigations of the causes of that condition. The patient was a man of thirty-five, born in Ireland, abstainer from alcohol, with no sexual history and suffering from gastric indigestion. Six years ago he first noticed some hyperesthesia of the forehead and some other parasthetic sensations. After this there developed a tendency to attacks of morbid sleepiness at unusual times. Only the exercise of the most brutal will-power enabled him to keep awake when the attack was on him. These attacks were automatic and did not seem to be induced by any habits of the patient. His tendency to sleep was so strong that he said that should he fall into a pool when the attack was on him he almost felt that he could not exert power enough to rise.

General Neurotic Condition.—The patient presents absolutely no hysterical stigmata. There is one marked feature in the case, namely a tendency to hyperidrosis. This is particularly noticeable on the palm of the hand and the soles of the feet. Sweat is very abundant just before an attack comes on. The patient is not rested by his sleep at night, though he sleeps for nine hours or more and always awakes fatigued.

Physical Condition.—Careful physical examination showed the presence of slight dilatation of the stomach, the lower border of this organ being several centimeters below the umbilicus. Examination of the stomach contents showed no pathological condition except the presence of hydrochloric acid; and the urinary examination was negative, except for an excess of chloride. This excessive elimination of chlorides is very marked. The coef-

ficiency of the toxicity of the urine was distinctly below normal. There was no history of infectious disease in the case from early childhood. The liver seemed to be absolutely normal in size and consistency and there was no functional hepatic derangement. The interesting feature of the case was the excessive output of chlorides, which was distinctly greater than the intake. Not only that, but the tendency to sweating also consumed a certain amount of the chlorides and so added to their diminution in the system.

Rôle of Chlorides.—The chlorides are taken into the system and are excreted from it as a rule unchanged. Their rôle within the body is entirely a physical one. They have an important influence on the osmotic tension of fluids within the body. It would seem that the true cause of the narcolepsy was the decrease in osmotic tension due to the excessive excretion of chloride. In the study of other cases with this symptom, this factor has not been noted and it would seem as though a more careful study of eliminative conditions with regard to the chloride will throw some light on this symptom-complex which has hitherto been so obscure in its etiology.

Luetic Narcolepsy.—Dr. Edward Fisher of New York said that there is usually an auto-intoxication present in those cases of morbid sleepiness in which no organic lesion can be found. It must not be forgotten, however, that most cases of symptomatic sleepiness are due to specific disease of the brain. When the tendency to go to sleep can be connected with no special cause and occurs at any time or place with a tendency to last for indefinite hours, or sometimes days, it is almost pathognomonic of cerebral syphilis. The most frequent cause is in the form of an enteritis. There is no form of this so frequent as that of syphilitic origin.

Other Causes.—Dr. Abraham Jacobi of New York says that undoubtedly lues is the frequent cause of morbid sleepiness. At the first symptom of the development of the condition there is usually an attack of melancholia. This form of the disease, however, occurs only in older persons. In younger patients there are a set of causes that it is important to bear in mind constantly. A boy of sixteen walked into Dr. Jacobi's office only this morning suffering from almost constant sleepiness. He had the open-mouth somewhat blank expression and the snoring breathing of a person with enlarged glandular tissue in the throat. Adenoids are undoubtedly a factor in the production, and a very important one, of morbid sleepiness. In this case, however, the added causative factor was undoubtedly masturbation. This practice had commenced at the age of five or six and had continued every day of the patient's life ever since.

Brain Hyperemia as a Cause.—Dr. Kinnear of Clifton Springs, N. Y., said that in many

cases of morbid sleepiness there is a poor circulation in the lower parts of the body. Patients complain of cold feet and when asked to tell say that they are as tired when they wake up in the morning as on going to bed. This means that there is brain hyperemia and the indication is to draw the blood from the brain to other parts by various means, when normal sleep will be induced. Dr. Stern in closing the discussion said that hyperemia is undoubtedly a cause of sleepiness, but only indirectly. The true cause is a lowering of the osmotic tension of the blood. This in his case, and probably in many other of the reported cases, was undoubtedly due to a diminution of the chlorides in the system. So far, however, he has not been able to accomplish an increase in the chlorides and so relieve his patients.

Cardiac Neuroses.—Dr. James K. Crook of New York said that the subject of neurotic conditions of the heart is in a disturbed state because of the number of terms that have been used for supposed divers conditions. Though we know much about the nervous mechanism of the heart, the inhibitory fibers supplied by the vagus, the accessory fibers and the presence of ganglia in the heart itself, we are not in a condition to state the exact cause for cardiac neuroses. The ganglia of the heart seem to have atrophic influence, but so far no changes have been found in them in pathological conditions. The nervous system seems to be mainly concerned with the regulation of the strength of the heart-beat and its relations to the size of the small arteries, so as to control the circulation.

Gastroptosis and Cardiac Neuroses.—Dr. Achilles Rose of New York said in the discussion that tachycardia must not be used as a name for conditions which represent merely accidental quickenings of the heart. The word paroxysmal should always be used with it and should indicate that the patient is liable to frequent relapses of rapid heart-action without known cause. In many of these cases of paroxysmal tachycardia stomach dilatation is found. In Dr. Rose's experience this dilatation of the stomach is relieved by strapping with adhesive plaster, according to Dr. Rose's method; it also causes a disappearance of the attacks of paroxysmal tachycardia.

Dr. Fisher of New York said that in his experience tachycardia was frequently associated with enteroptosis. Many neurasthenic patients who suffer from attacks of tachycardia are really the victims of prolapse of the hollow viscera of the abdominal cavity and it is this condition particularly that requires careful treatment.

The Medical Profession and Private Charitable Institutions.—Dr. Enoch V. Stoddard of Rochester, N. Y., a Commissioner of the State Board of Charities, read a paper on the official relation of the medical profession to private charitable institutions. He said that public

charity, as it is administered by the State, is entirely a business matter. The State does not enter upon it for altruistic reasons, but because there is the realization that the indigent classes, when uncared for, take on certain tendencies to active dissatisfaction. It is quite different, however, with regard to institutions founded by private charity. To these the doctor owes his personal service and then his duty to science and in the collection of statistics. Very frequently there is no medical man on the board of managers. Hence the difficulties that frequently arise, though some of them get along very well for years. There has been an unnecessary multiplication of these institutions and the new Charter of the State of New York makes it somewhat less easy to establish them. It is probable that more of these institutions will not be founded for some years. Existing institutions must be improved then. There are 35,000 inmates in such institutions in New York State and the valuable amount of statistical material is constantly going to loss. It seems important that the profession should exert itself to secure proper recognition in the management of these institutions and should encourage the collection of the statistics they afford.

Cerebral Apoplexy.—Dr. Edward D. Fisher of New York said that apoplexy need not necessarily be associated with paralysis. At times the arterial rupture in the brain occurs at a part remote from the motor areas. In such cases there may be other symptoms, loss of memory, a tendency to laugh or to cry without reason, a loss of the sense of one's surroundings. In these cases there is always a general atheroma of the arterial system and early in its development this affects the kidneys. Interstitial nephritis ensues and is followed by hypertrophy of the heart which readily endangers the diseased arteries in the brain. Urinary secretion forms an important index of danger in these cases. Persistent low specific gravity points to progressive arterial degeneration. This may culminate in apoplexy in patients of careless habits, but the apoplectic attack may be cut off for years by the avoidance of excess.

Alcohol in Apoplexy.—In Dr. Fisher's opinion steady drinking of a certain amount of alcohol every day, especially in men of sedentary habits somewhat advanced in years, is of much more danger than periodical excess in the taking of alcohol. Often these people are unaware of the amount of alcohol they are taking. Syphilis is also an important cause. These three conditions arteriosclerosis, alcohol and syphilis constitute the etiology of 90 per cent. of all the cases.

Anomalous Apoplexy.—There are certain forms of cerebral disturbances that are due to temporary arrest of cerebral circulation. This is what used to be called serous apoplexy and is undoubtedly due to localized cerebral edema.

No pathological change is found postmortem and these conditions used to be thought due to uremia. Astasis of circulation occurs with the symptoms of an arterial rupture in the brain. In older people these sometimes take on an epileptiform character, though essential epilepsy never develops after twenty-five. Often apoplectic patients complain of pain in the paralyzed limbs, but this is psychical and not due to a true painful condition.

Gouty Apoplectic Attacks.—Dr. William Browning of Brooklyn said that serous apoplexy occurs especially in persons of gouty habit. Often the administration of a laxative will relieve the symptoms in these conditions. Where a number of these attacks of supposed serous apoplexy occur at autopsy there will often be found the remains of slight hemorrhages. There will be found an atrophy much greater than usual in the limb complained of and this seems to be due to a local neuritis. When the trophic influence of the brain is lost a neuritis held in abeyance before becomes active.

Dr. Jacobi said that there is undoubtedly a true passing apoplexy in which after the interruption of the cerebral circulation in a part of the brain the collateral circulation is rapidly reestablished and the apoplectic symptoms disappear.

Dr. Elsner of Syracuse said that attacks of serous apoplexy so-called are sometimes due to limited areas of edema of the brain left after uremic convulsions. Localized edema of the motor area causes transitory paralysis.

Causes of Apoplexy.—Dr. Spratling of Sonyea, N. Y., said that 85 per cent. of the cases of epilepsy occur before adult life. Epilepsy after the twentieth year is different from that which develops before. It is the epilepsy of early life that oftenest produces unsoundness of mind. This is because it has a systemic basis. Heredity is a very marked feature in the etiology. Epilepsy occurs in parent and offspring in 16 per cent. of all the cases at the Colony. Alcoholism in the parents is found in 14 per cent., insanity in 8 per cent., and tuberculosis in 13 per cent. This accounts for more than one-half of all the cases. Undoubtedly many cases of early epilepsy develop as the result of birth injuries.

Treatment of Epilepsy.—The bromides are undoubtedly the best remedy to control, but not to cure epilepsy. Owing to the depressing effect upon the system they should be used in combination with narcotics, nutritives, alteratives, baths, enteroclysis, and constant care of the dietary, the amount of exercise, the amount of sleep and the regulation of the daily life. In order to have the system take up bromides better, sodium bromide has been substituted for common salt as a condiment for the food. This proves an excellent method of administering it. Of late an organic compound of bromo-bromine-bromopin has been used. This

does not produce constipation, nor hebetude, nor acne. An advantage is that it may be used in the status epilepticus hypodermically without producing abscesses. Surgery sometimes does good in epilepsy but not very often. In one case of Jacksonian epilepsy, with the aura always in the first joint of the thumb, there were nearly 500 attacks in 50 hours. The brain was examined very carefully by a pathologist who was unable to find any pathological change in it.

Asphyxia and Epilepsy.—Dr. Jacobi in the discussion said that asphyxia in the newborn is a frequent cause of cerebral disturbance in later life. The longer asphyxia has continued the more surely will serious conditions ensue. The first care of the obstetrician then must be its relief. If there is a question of the mother and the child, the child must be attended to rather than the mother. In case of severe bleeding on the part of the mother it may be necessary to ask one of the family to make firm pressure upon the uterus, for the doctor must give his attention to the child. Dr. Jacobi suggests that if necessary the doctor should sit on the uterus and devote himself to the child. In Dr. Jacobi's experience dentition does not cause epilepsy, though some concomitant disease may prove a reflex source of epileptic seizures.

Premature Ossification.—Premature ossification of the fontanelles is an important cause of epilepsy and idiocy. These openings should close from the tenth to the sixteenth month. If they are closed at birth or if they close in early infant life at from three to six months, the brain has less chance to develop normally. Epileptic conditions later in life are often due to this cause. This must be distinguished, however, from true microcephalus in which there is failure of the brain to develop and consequent smallness of the skull.

Spinal Anesthesia.—Dr. Willy Meyer of New York said that spinal anesthesia is undoubtedly going to take an important place in modern surgery. Certain momentous questions, however, need to be answered and every careful surgeon who employs this method should note the details of every operation so as to enable us to solve these questions. For instance, should some cerebrospinal fluid be removed before the injection? Should this cerebrospinal fluid be used as the solvent of the cocaine which is to be introduced? Should the injection be made slowly or rapidly? What is the most favorable position of the patient? Should the solution injected be concentrated and what should be its temperature? Answers to these questions will enable us to use this method that we owe in large part to American inventive genius with much more security and assurance.

Question of Drugs.—There are undoubtedly certain inconveniences attached at times to the injection of cocaine. Thus far ordinary co-

caine has been employed, but there is no certainty as to whether betacocaine or tropacocaine might not be employed with less fear of sequelæ. Karschbaum introduced tropacocaine to the profession and in ordinary local anesthesia it certainly has much less after-effect than ordinary cocaine. Solutions for spinal injections should be made fresh for each patient. In Dr. Meyer's work on animals a solution that stood for a week had lost much of its anesthetic properties. When kept for two weeks it was useless. Spinal anesthesia is especially indicated in operations upon the kidney.

Inconvenience of Spinal Anesthesia.—Dr. Mynter of Buffalo said that in one case in which he used spinal anesthesia in an old man for a radical operation for hernia, projectile vomiting occurred. This led to the protrusion of all the intestines through the opening made in the abdominal wall. After their reduction, vomiting recurred once more with a second protrusion of the intestines. When the patient sat up to vomit his intestines were spread out on his abdomen. Where such a complication is feared, spinal anesthesia should not be used.

Prolonged Medication.—Dr. Jacobi of New York said that contrary to the opinion held by some authorities digitalis may be employed over prolonged periods. In cases of acute dilatation of the heart where there is great cyanosis and serious disturbance of the circulation, large doses may be employed and repeated several times until the effect is obtained. Dr. Jacobi does not hesitate to employ a dose of ten to twelve grains of digitalis, repeated once or even twice at intervals of four or five hours, until the serious acute condition is overcome. In chronic loss of compensation, he uses four to six grains of digitalis daily for weeks, or even months, and has no fear of its cumulative effect. Dr. Jacobi usually employs four to six drops of Squibbs' fluid extract per day combined with sparteine, or arsenic, or strychnine. Further details will be found in Dr. Jacobi's article which is to appear in the *MEDICAL NEWS*.

The President's Case.—Dr. Matthew D. Mann of Buffalo then read abstracts from the autopsy on the late President, which will be found complete in another part of this week's *News*, and gave some account of the case. Dr. Mynter of Buffalo, another medical attendant on the late President, said that now, after the autopsy and the thorough discussion of the case, there was no doubt in his mind that if the President had to be treated over again he would be treated in exactly the same way as he was. The exact cause of death was unknown. It was probably due to the patient's very sedentary life and lowered vitality.

Early Diagnosis of Pulmonary Tuberculosis.—Dr. J. E. Stubbart of Liberty, N. Y., said that the Roentgen rays are of special service in the diagnosis of early forms of pulmonary tuberculosis. He showed a series of

radiograms with a stereopticon that illustrated how much information might be obtained from this method of examination. Very early changes in the lung, especially such changes as occur beneath the surface and which can not be detected by ordinary methods of physical examination are brought out very clearly by the Roentgen rays.

Treatment of Tuberculosis.—Dr. Stubbart said that no worse advice could be given to a person than that sometimes given by family physicians. They say "Go to the country for a while and keep away from doctors." Unless the patient is under the care of a physician serious mistakes will be made and the progress of the case delayed. More improvement will come from treatment in New York City under the care of a physician than in the country without one. In Dr. Stubbart's experience pathological conditions of the nasopharynx often exist and these hinder improvement. It should be a routine practice to examine the upper air-passages of all patients suffering from or suspected of suffering from tuberculosis and then the existing pathological conditions should be treated.

Drug Treatment.—Drugs are important in the treatment of tuberculosis. Where anemia exists, iron and arsenic should be used and static electricity and hydrotherapy employed. Exposure of the patient to the parallel rays of the electric arc will be found of excellent service. Patients should, of course, be advised to eat heartily, but there is almost more danger of overfeeding and consequent disturbance of digestion than there is of underfeeding. When tuberculous patients began to convalesce their appetites are often enormous. Under these circumstances it is important that tonic medicine should be carefully employed and the digestive tract kept in as good condition as possible.

Tuberculosis and Endocarditis.—Dr. J. M. Anders of Philadelphia said that in certain cases of endocarditis, tubercle bacilli have been found in the lesions. As a rule, however, primary tuberculosis of the endocardium is not seen. The endocardium becomes involved secondarily in cases of miliary tuberculosis and at times, also, when there is extensive involvement of the mediastinal glands. The endocardium acts as a protector against tubercle invasion. In this respect it is very much like the inner coating of the blood-vessels. The intima of the blood-vessels is very seldom affected primarily by tuberculous processes and tuberculosis when found occurs in the other coat of the vessels. Tuberculosis of the endocardium can only be diagnosed by exclusion.

Heart Lesions and Tuberculosis.—Long ago Rokitansky said that enlarged heart protected patients from tuberculosis. Traube, Niemeyer and other German authorities were not quite as absolute in this opinion as Rokitansky, but

they agreed that heart lesions served to ward off tuberculosis. According to statistics tuberculosis is less in people with heart disease, but the protection afforded is variable according to the orifice at which the lesion occurs. Of late, moreover, the more careful collation of statistics has shown that heart cases are not spared tuberculosis as often as has been thought. Clinically, in cases of tuberculosis, heart lesions are found in less than 2 per cent. Of the cases, at autopsy, however, according to a recent set of statistics, 16 per cent. of the tuberculous have heart lesions. There are two reasons for this discrepancy: One is that the heart lesion often escapes notice. The other is that the tuberculous process is sometimes latent.

Reason for Protection.—It has been thought that the protection afforded by a heart lesion was due to congestion of the lungs. Abrams pointed out, however, that when loss of compensation occurred tuberculosis of the lungs often becomes fulminant in character. He attributes it to hypertrophy of the heart. It is well known that a small heart predisposes to tuberculosis. Hemoptysis relieves congestion of the lungs, and yet, as is well recognized, often slows the progress of pulmonary tuberculosis. It is probable then that the better circulation in the lungs from a hypertrophied heart has much to do with the protection afforded.

The Uterine Muscle in Displacements.—Dr. Henry C. Coe of New York called attention to the fact that in many cases of prolapse of the uterus with ante- or retroflexion it is not so much the position of the uterus as the lack of muscular tone that is responsible for the symptoms. The uterus falls down below the normal plane in the pelvis and then comes the headache, dragging feeling, dyspepsia and other symptoms. A series of operations may be done, relieving the malposition, but if the lack of tone of the muscles continues, the symptoms will not be relieved. The general condition of the patient must be taken into account. The muscular tone must be increased and patients must not be assured of complete recovery by operation alone.

In discussing Dr. Coe's paper, Dr. Grandin said that the symptoms in these cases depend on the sagging and not the tilting forward or backward of the uterus. The improvement of muscular tone must always be borne in mind as an important factor for the relief of the symptoms, but no relief will come unless the uterus is suspended, either by Alexander's method, or from the abdominal wall.

Abdominal Actinomycosis.—Dr. Van der Veer of Albany reported a case of abdominal actinomycosis. The patient was thought to be suffering from sarcoma. So many adhesions were found, however, at operation that it was concluded that some form of chronic granuloma was present. No origin for the disease

could be found except that the patient was frequently in contact with hay and straw in feeding animals. The patient is about to make a good recovery under simple drainage. Dr. Van der Veer found iodide of potash of distinct service in the treatment of the case, and also Fowler's solution. He suggests the more careful preparation of grains for food. It is possible in cereals that the actinomyces fungus finds a way into the human subject.

EVENING SESSION.

Symposium on Some Diseases of the Liver and Bile Passages.

Aberrances of Gall-Stones.—Dr. Charles G. Stockton of Buffalo discussed the diagnosis of gall-stones and especially the anomalous symptoms they not infrequently presented. Gall-stones are now generally conceded to be due to infections. Their frequency is much greater than has been thought. At autopsy 25 per cent. of all women over 60 present gall-stones, although 90 per cent. of these cases have never presented any symptoms of the condition. The original formation of most gall-stones is due to an infectious process set up in the gall-bladder and acute attacks of gall-stone colic are usually brought into exacerbations of this infectious process. The question especially of the intermittency of the jaundice and the probable origin of this condition in a ball-valve action of the gall-stones in the biliary duct was touched upon.

Gall-Stone Fever.—Dr. Stockton used to be decidedly of the opinion that when in the midst of a severe paroxysm of pain referred mainly to the right hypochondriac region a rigor occurred, followed by high temperature and a tendency to collapse, these symptoms were sufficient to indicate with assurance the presence of a purulent process in the biliary region. Further experience has convinced him, however, that all of these symptoms may occur with only an ordinary attack of gall-stone colic without any suppuration. An important differential diagnosis is that which must be made from gastralgia. It is not easy to make as a rule. The chief symptoms of gall-stone colic on which special significance must be placed for differential diagnostic purposes are paroxysmal pains, tenderness in the region of the ninth rib on the right side, vomiting, ague-like attacks of fever, jaundice with collapse and calculi in the stools.

Courvoisier's Law.—Dr. Richard C. Cabot of Boston, Mass., said that about three years ago, while examining a case with evident biliary symptoms a colleague referred to Courvoisier's law. When he expressed his ignorance of it, the colleague referred him to Osler. There he found the law which was established by the Basel surgeon in 1890. As the law is important for the diagnosis of biliary conditions and as others may not be aware of its existence a statement of it seems not inopport-

tune. Simply put, Courvoisier found as the result of a series of clinical observations that when there was obstruction of the bile-ducts by gall-stones, enlargement of the gall-bladder is extremely rare. If, however, the obstruction of the gall-duct is due to other pathological conditions then obstruction is almost the rule. He studied 187 cases of biliary conditions before announcing this conclusion. Of these 87 were of gall-stone origin and 70 of them presented atrophied gall-bladders. One hundred patients suffered for other reasons than gall-stones, and in these 92 had distended gall-bladders.

Confirmation of the Law.—In 1892 Mayo Robson, an English surgeon, evidently without knowing that his conclusions in the matter had been anticipated by the Swiss surgeon, announced that jaundice with distention of the gall-bladder indicated the presence of a malignant tumor obstructing the bile-duct. When there was no distention of the gall-bladder the obstructing agent was commonly gall-stones. Professor Naunyn of Strasburg considered Courvoisier's law well established.

American Teaching.—Curiously enough Courvoisier's law seems to have escaped the attention of most of the writers of text-books in America. Many of them state very simply on general principles that when there is an obstruction of the bile-duct distention of the gall-bladder takes place. Carrying the theory still further, some of the important text-books state that in cases of gall-stones distention of the gall-bladder may be looked for, and when it is found, the presence of a gall-stone may be diagnosed.

Confirmation of Law by Boston Cases.—Dr. Cabot searched the records of the Massachusetts General Hospital. Here he found ample confirmation of the law. In 86 cases of gall-stones in which the hospital record gave sufficient details to enable one to come to a decision as to the presence or absence of distention of the gall-bladder only four violated Courvoisier's rule. When gall-stones were present with the exception of a single case the gall-bladder was not found distended, but either spasmodically contracted or atrophied. In all malignant cases the gall-bladder was noted as distended with two exceptions, there being one doubtful case.

Infections of Gall-Bladder.—Dr. B. Farquhar Curtis of New York replaced Dr. Maurice Richardson, absent through illness, in an article on this subject. Dr. Curtis said that formerly bile was thought to be sterile. Bile checked yeast fermentation and was thought to be germicidal in its action. Normal bile has been found, however, not to be a germicide and the duodenum is as sterile without bile as with it. American observers have shown that two-thirds of the bile of patients operated upon contains microbes. These microbes find an entrance through the duct, or, at times,

through the bladder. Infection through the bladder is sometimes considered a far-fetched notion, but it has been shown experimentally that the injection of typhoid bacilli into the blood of animals may lead to the presence of typhoid bacilli in the gall-bladder.

Favoring Conditions.—The presence of foreign bodies in the biliary passages or of any condition that obstructs the flow of bile favors the occurrence of infection. Where gall-stones are present infection almost invariably takes place. Dr. Curtis has seen a case recently in which jaundice lasted for many years. The patient died after an operation for appendicitis and a peculiar condition of flexure of the bile-duct was found. This flexure seemed to be due to a congenital prolongation of the duct and acted as a valve. Hence the intermittence of the jaundice of the case. The family history showed that a brother of the patient had suffered from intermittent jaundice for many years. Their mother had been affected the same way for most of her life.

Consequences of Gall-Stone.—Dr. Curtis considers that acute peritonitis from complications due to the presence of gall-stones is much more frequent than has been thought. The prognosis of these cases is much worse than has usually been considered. Many of the more or less sudden and unexplained peritonitides are due to complications and sequelae of gall-stones. The differential diagnosis between an attack of gall-stones and appendicitis is not always easy to make. It is not an uncommon thing for the present-day surgeon to open an abscess on the right side of the abdomen midway between the appendix and the gall-bladder without knowing to which of these important and dangerous organs the pathological condition may be due. The mere evacuation of the pus does not always tell the story of its origin, and it is not until gall-stones are found in it that it can surely be concluded to be due to biliary conditions.

Technic of Gall-Stone Surgery.—Dr. S. J. Mixter of Boston said he considered the use of rubber gloves in gall-stone operations a mistake. The operation is done in the depths of the abdomen and the sense of touch is extremely important and is much blunted by the use of gloves. A careless surgeon may easily miss small stones in the duct and this will, of course, give rise to recurrences or may prevent the operation from having any good effects. Palpation of the duct can be best accomplished through the foramen of Winslow. The surgeon's exploration can be made most readily by turning his back to the patient, which thus gives him the anterior surface of his finger for palpation.

Evacuation of Fluid.—If there is considerable amount of fluid in the gall-bladder, it should be emptied by trocar. The question of drainage is always important and Dr. Mixter always employs it even though the gall-fluid

seems to be sterile or apparently normal. Dr. Mixer has done the so-called ideal operation of sewing up the gall-bladder, but does it no more, because of fatalities that he has seen, though fortunately not in his own experience. The ideal operation is by no means ideal. For drainage Dr. Mixer inserts a flaring glass tube which is tied into the gall-bladder. This is simpler, neater and causes less pain and dragging than the sewing of the gall-bladder to the abdominal walls.

Oozing after Operation.—For the ghastly fatal oozing that sometimes occurs after operation, Dr. Mixer uses fine gelatin carefully sterilized, to which a little adrenalin is added for the purpose of producing hemostasis. Fortunately these cases are extremely rare for they constitute one of the series opprobria of gall-stone surgery.

Cholecystectomy.—Dr. Charles L. Gibson of New York said that drainage in gall-stone cases is by no means a radical operation and the possibilities of a recurrence are not relieved. Kehr, the German authority to whom we owe so much, found that after drainage in nearly seventy per cent. of the cases some symptoms of the biliary condition returned. After extirpation of the gall-bladder, however, he found recurrence of symptoms in only one of the cases. Removal of the gall-bladder is certainly in the line of preventive medicine, the great desideratum of the present day. Cancer of the gall-bladder develops in about 14 per cent. of the cases of gall-stone. The removal of the gall-bladder would prevent the development of cancer and so is an important prophylactic. The operation of cholecystectomy is comparatively simple and the value of the gall-bladder as a reservoir is doubtful; there is no need of keeping it, as is sometimes urged, as a guide in future operations.

SECOND DAY—WEDNESDAY, OCTOBER 16TH.

Medical Aspects of Appendicitis.—Dr. W. E. Ford of Utica said that some of the difference between the statistics of appendicitis in this country and in Europe was undoubtedly due to the fact that the European common people ate different food and were not so much in the habit of bolting their food. Appendicitis is especially common in America among young athletes. This is probably not due to any action of the psoas muscle notwithstanding the claims made in this direction. Traumatism is not a frequent direct cause of appendicitis, though Dr. Ford recalled two cases in which it seems to be the determining cause. In these cases there would seem to have been some pathological conditions preceding the injury. It is probable that a normal, freely moving appendix could not be injured directly. As the result of clinical experience it would seem better to give a light hypodermic of morphine than to give drugs by the mouth. Dr. Ford does not think that the awful warning usually fulminated against the

giving of opiates, that it masks the symptoms, is quite deserved. When patients have severe pain it may be relieved by a morphine injection, though of course this should not be repeated. The most prominent medical indication is for catharsis. An ice coil should be placed on the abdomen for 24 hours. After this palpation will show the presence of appendicitis by offensive fulness and the spasm of the rectus muscle. If the temperature and pulse continue normal in 24 hours usually no operation will be needed. If after 48 hours there is rise in pulse and temperature the immediate operation is indicated. If palpation shows extreme tenderness then the indication is for immediate operation. If there is a sudden cessation of pain, perforation or gangrene has probably taken place and operation must not be delayed.

Significance of Tumor.—The presence of a tumor does not necessarily indicate pus formation. Catarrhal appendicitis may well give rise to swelling. As soon as tumors form operation is not necessarily indicated. There are many who think that operation at the earliest moment possible is the idea. Dr. Ford has not seen the best results in very early operations. The only cases in which he has to reoperate because of intestinal obstruction are those in which operation had been done very early with consequent diffusion of the inflammatory exudate and the formation of more extensive adhesions than are usually the rule.

Interval Operations.—After a single attack of catarrhal appendicitis should the patient be operated upon? Sometimes such attacks do not recur. If the attacks are repeated and the health becomes impaired because of the consequent disturbance of digestion then operation should certainly be counseled. If there is more than one recurrence then operation is at least advisable. Dr. Ford does not believe in the continued use of cathartics. The patient should not be kept absolutely on a milk diet, but should be given rice and soft pulpy foods.

No Medical Aspects.—Dr. Herman Mynter of Buffalo said that he did not know that there were any medical aspects to true appendicitis. Professor Ewald of Berlin, one of the most distinguished authorities in the medical aspect of stomach and intestinal diseases, has asserted over and over again that appendicitis is not a medical but a surgical disease. The appendix is an organ of low vitality with large absorbing surface in which micro-organisms from the intestines are liable to become imprisoned and which because of its single arterial blood supply is liable to become gangrenous from the stoppage of that blood supply. The conditions which develop in it then are those of serious inflammation liable to become purulent. For such conditions medicine can do nothing and it is self deceit to pretend that it can.

Catarrhal Appendicitis a Bad Term.—Dr. Robert Morris of New York said that the word

catarrhal as applied to appendicitis has been a most fatal term. Catarrhal appendicitis is probably without symptoms. Whenever appendicitis presents itself for treatment it has gone beyond the catarrhal stage. The use of the word, however, has encouraged the idea that there may be an inflammatory condition in the appendix giving symptoms and capable of complete restoration to health. Dr. Morris is of the opinion that trauma has something to do with the development of appendicitis and he thinks that the psoas is able to twist many appendices.

Heredity and Etiology of Insanity.—Dr. Carlos F. MacDonald of New York read a paper in which he brought out the growing tendency of psychiatrists to consider heredity as the most important factor in the etiology of insanity. There are three forms of mental disturbance in which the influence of heredity is especially noteworthy. These are idiocy, imbecility and degeneracy. The presence of hereditary predisposition causes emotional strain and overwork to affect certain people much more than others. The usually cited causes of insanity, such as the loss of money, loss of friends, failure in business, failure in chosen careers, occur to most people and yet most people are comparatively sane. An insane strain in a family stock is the basis on which mental disturbance develops, though we do not know the *modus operandi* of hereditary influence. This is especially true in the so-called functional insanity.

Pathology of Migraine.—Dr. William H. Thomson said that migraine is not a degenerative neurosis that occurs like certain forms of neuralgia late in life when people are breaking down, but occurs mainly early in life and may disappear after fifty. Migraine is a class disease and certain classes of people do not suffer from it. Sailors, farmers and workmen engaged in outdoor occupations, or people who are accustomed to considerable exercise in the open air are never affected by it. Clergymen, students, business men, workers in sedentary indoor occupations, housewives, shopgirls and so forth, are the special subjects of it. It is probable that in this distinction of the people who are liable and those who are immune to it we have the physical basis of the disease. The difference in the habits of the two classes of people are especially those which affect the portal circulation. This is the weakest part of the circulation of the body. It has the least share of the force of the heart and the blood must find its own way through the second set of capillaries in the liver substances the walls of which are not elastic. The portal circulation depends then on the adjutants to the circulation. Of these the most important are the respiratory movements. The up and down movement of the diaphragm and the corresponding movements of the abdominal muscles in deep breathing have an easily recognizable influence upon the flow of blood in the portal veins. How important these muscular movements may be as regards pathological proc-

esses we can gather very well out of the fact that one out of every four women suffer from gall-stones after the age of fifty.

The Liver as a Manufacturer of Antitoxins.—One of the main functions of the liver is undoubtedly to neutralize certain poisonous substances which are entering the circulation through the gastrointestinal tract. These substances have a special tendency to act upon the liver. It may easily be understood then how the lowering of hepatic function can lead to nervous painful conditions. Heredity is another important factor in the causation of migraine and there is nothing that is more hereditary than digestive disturbances.

Treatment of Attacks.—All severe cases of migraine are associated with chronic dyspepsia, but especially chronic constipation. For this a five-grain blue mass pill given once a week and followed by a saline the next morning is part of the routine treatment. Mercury undoubtedly provides our best intestinal antiseptic. Every morning one or two drams of sodium sulphate and ten grains of sodium salicylate, should be taken in a glass of hot water. Some prefer to use sodium phosphate, but the sodium sulphate is more satisfactory. Besides this there should be daily ten grain doses of phenol or naphthol bismuth, or of the sulpho-carbolate of bismuth. For the actual attacks themselves, dram doses of pure extract of ergot are the best remedy to cut them short. Patients should remain quiet after the administration of the drug and the dose may be repeated after an hour if necessary. For some patients 15 grains of antipyrin is an excellent remedy. This should never be given except in association with a dram dose of aromatic spirits of ammonia. It is important to regulate the diet of migraine patients and yet not very much can be said as to a definite set of rules. As a rule pale and anemic individuals should be encouraged to eat more than before. Red meats, however, should be avoided to a large extent and especially should not be taken at night. One dietetic rule can always be given with more or less assurance, that is if anything is tasted again after being swallowed or in the midst of gaseous eructations, this is to be a sign that the stomach does not want that stuff any more. Generally migraine occurs during the years when the nervous system is overtaxed by worry. If we can make the attacks of migraine less frequent we are not only conferring a present benefit on the patient, but we must not forget that it is in these patients particularly that melancholia is apt to develop. It is well known now that intestinal antiseptics is important for the prophylaxis of melancholia and so we may be doing our patients a double benefit.

Other Drugs.—Dr. Jacobi in discussion said that the migraine may occur in very early years, even at three or four or five years of age. Usually the patients are pale and underweight and sleep better without a pillow. The vomiting that so often occurs in migraine is another sign that the patients are suffering from cerebral anemia.

Counteract this and much is done to benefit them. Dr. Jacobi has found aconite the best drug, though the American preparation gives no benefit and only the French aconitine of Duquesnal succeeds. *Cannabis indica*, the English preparation, is another effective remedy. This should be given in doses of the extract, one-half to three-fourths of a grain. Dr. Jacobi also employs strychnine and arsenic and believes that combinations of drugs are very effective.

Perinephritic Hemorrhage: Non-Traumatic.

—Dr. Arthur Booth of Elmira presented the report of a case in which the patient died from hemorrhage in the neighborhood of the kidney without any trauma to occasion it. The man had been a somewhat heavy drinker since his college days and the arterial changes consequent upon this would seem to have been the reason for the hemorrhage. Seventeen days after the acute pain that accompanied the first hemorrhage, he was prepared for operation, but died suddenly before the operation was begun. The clot around the kidney was laminated and partly organized and the successive hemorrhages seemed to occur when the clot contracted. Spontaneous kidney hemorrhage is extremely rare in adults, but not uncommon in children.

Nephropexy.—Dr. George Edebohls of New York said that in cases of floating right kidney he often finds chronic appendicitis present and removes the appendix at the time of the kidney operation. At the same time owing to the frequency of biliary disease in women, he palpates the biliary passages. He no longer uses sutures through the kidney substance itself in order to anchor the kidney, because the presence of the suture may lead to urinary fistula. He has operated upon 261 kidneys in 193 patients and has lost only two patients.

Uterine Bisection.—Dr. W. G. MacDonald of Albany demonstrated a series of specimens in which uteri bound down by adhesions were easily removed by bisection. In certain cases the use of electricity and the curette in the treatment of uterine conditions leads to the formation of firm adhesions. Fibroid tumors have a like effect. In these cases the bisection of the uterus, either in a vertical or horizontal plane, often renders extremely difficult operations simple.

Priority in Bisection.—Dr. Howard Kelly of Baltimore said that undoubtedly Dr. MacDonald of Albany had been the first to do bisection of the uterus in the cure of severe conditions. Dr. J. Faure had also seen the usefulness of this operation. Dr. Kelly thinks that this bit of technique has done more for the improvement of gynecology than any method introduced in the last 15 years. It makes difficult cases that were frequently lost before comparatively simple.

Kidney Incision for Stone.—Dr. Howard Kelly demonstrated by a series of preparations and specimens how the incision for stone should be made in diseased kidneys. His assistant Mr. Bradel rediscovered the fact pointed out by Hyrtl some years ago, but lost sight of, that the

kidney circulation was in two distinct parts. The anterior and posterior parts of the kidney are supplied by distinct sets of arteries. If the incision can be made between the circulations very little bleeding occurs. There is a white line on the posterior surface of the kidney pointed out by Dr. Bradel, which Dr. Kelly proposes to call the Bradel line, that is an index as to where the incision should be made. The incision must be made parallel to the surface of the kidney, and not transversely into the pelvis.

Are the Tonsils Normal?—Dr. F. H. Bosworth, of New York, said that the question of the normality of the tonsils is an open one. In many tonsils there is a mass of tissue containing a blind duct and some lacunar follicles and some lymphoid tissue. Other tonsils contain only lymphoid bodies and there is question whether these latter tonsils are not the really normal structures. As a matter of fact there is in many throats a ring of tonsillar tissue, consisting of four organs, Luschka's tonsil, the lingual tonsil and two faucial tonsils. The deep lacunae or crypts which occur in some tonsils are certainly adventitious and pathological, and form traps for infectious micro-organisms. Twenty years ago, Dr. Bosworth said before the Laryngological Congress in London that there were perhaps no tonsils in health. He is ready to repeat this now after years of further experience.

Removal of Tonsils.—The notion that the tonsils are usually pathological, would be good for the laity to have for then they would be ready to accept the idea of having them removed. Whenever the tonsils give symptoms in early life they should be removed. Dr. Bosworth prefers the cold snare to the tonsillotome. Partial removal is the worst thing that could happen because it lays the lymphoid tissue open to easier infection. With the cold snare all danger of hemorrhage is removed. In children this is not a serious consideration, but at 12 or 14 years of age hemorrhage may prove alarming. After 15 it is positively dangerous. Dr. Bosworth uses chloroform anesthesia to relaxation not to complete narcosis and in many hundreds of cases has never had the slightest symptom.

Prognosis of Croupous Pneumonia.—Dr. J. C. Wilson of Philadelphia said that 100 years ago Laennec of Paris insisted on the large personal element there is in the prognosis of pneumonia. Adding to the difference of season and of place, circumstances and age made great difference in the mortality from the disease. These are abiding truths even down to our own day. The farther advanced the age the worse is the prognosis, but yet comparatively young people die not infrequently, especially in hospitals. During the last five years, the statistics of pneumonia at the German Hospital in Philadelphia, have not been satisfactory. This has led to a careful review of their methods of treatment.

Specifics for Pneumonia.—Dr. Wilson said that many drugs were recommended as specifics

in pneumonia, but none of them really act as such. Some years ago Petruschky attracted attention by announcing that in 1,100 cases of pneumonia, treated by large doses of digitalis, he had had but a little over two per cent. of deaths. His cases, however, occurred among young soldiers with whom the prognosis was naturally good. More recently Aufrecht has found that quinine seems to reduce the mortality from pneumonia. Where the mortality has been from 10 to 25 per cent., it was reduced to less than 8 per cent., and this immediately after a year in which the mortality had been 24 per cent. It is doubtful, however, if there is any specific for pneumonia and the apparent improvement in statistics is really due to the different character of the disease in different years and in different classes of patients. At the German Hospital in Philadelphia they employed antipneumococcus serum in some 40 cases but their mortality was 28 per cent. Hydrotherapy also failed to benefit patients. Dr. Wilson does not believe in the use of *veratrum viride*, or aconite, to abort pneumonia. There are those who claim good results, but it must be remembered that a century ago venesection seemed to most doctors to produce this effect.

Present Treatment.—At the German Hospital they now employ expectant treatment. Patients are given milk and light gruels or broths with junket, if they want it. Patients are allowed water whenever they wish it, but not more than 2 ounces at a time. They are sponged night and morning, the temperature of the water being according to patient's choice. If the temperature reaches 104° F. a cold sponge is given. Flat icebags are placed on the chest to relieve pain and thus patients are often made very comfortable. About 4 to 6 ounces of alcohol are given in the 24 hours and even more to patients who are accustomed to it. Calomel is given when the case first comes if there has not been free purgation. As a routine treatment, Dover's powder, 2 to 3 grains, every three hours, is given just to the point of drowsiness. Expectorants are rarely given. Occasionally aromatic spirits of ammonia or ammonium carbonate are employed. Nitroglycerine is given for a laboring right ventricle. For dyspnea, oxygen freely mixed with air is employed. For nervous symptoms the Dover's powder is increased and an icebag placed on the head. In severe cases cold is applied to the head and neck. No poultices or jackets are worn. Meat is given as soon as the patient desires it in convalescence, but he is not allowed to get out of bed until satisfactory improvement has taken place.

In discussion Dr. S. B. Ward of Albany said that icebags should not be used if they make the patient uncomfortable. Opiates do good by reassuring the patient. In his own experience Dr. Ward has found creosote carbonate of service, although it is not given if it produces indigestion. There is more danger of overfeeding than

of underfeeding in pneumonia. Heart failure is the great cause of death. Hence digitalis should be employed early in the case and it is undoubtedly for this reason that it has obtained its recent reputation.

Fresh Air in Pneumonia.—Dr. Hunter of Toronto said that at the Western Hospital in that city some years ago large tents were erected in the hospital yards for the open air treatment of pulmonary cases. In these, pneumonia cases particularly, do very well. All acute pulmonary diseases are relieved by this open air treatment. If Dr. Hunter were to fall sick with pneumonia he would prefer to be treated under the trees in the park, with a piece of canvas to cover him at night, than in the best appointed hospital in the world.

In closing the discussion Dr. J. C. Wilson said that fresh air is undoubtedly a great desideratum in pneumonia. Military men affected with the disease and treated in tents do very well. Pneumonia is not an uncommon affection in lumber camps. During his autumn vacations Dr. Wilson has had an opportunity to convince himself that pneumonia is not as fatal in the camps as it is in hospital experience.

Mastoiditis.—Dr. T. H. Halstead of Syracuse said that it would be much better if the middle ear were considered as an accessory sinus of the naso-pharynx and the condition of the throat constantly kept in mind whenever there seemed danger of middle ear disease. The formation of pus in the middle ear is even more common than has been thought. In 30 cases of meningitis in children in Munich, although there had been no sign of middle ear disease, the ears were carefully examined at autopsy and in every case were found to contain pus. The pathognomonic symptom of mastoiditis usually given namely the red and tender mastoid process, is really a late symptom in the affection. The disease exists long before this. As a rule, free incision of the drum with free purgation will benefit the acute stage of mastoid disease if employed in time. Morphine should never be given because it masks the symptoms. Ice should be employed during the first forty hours and if it does not afford relief by this time its continued use will only increase the death of bone. When the ear discharges freely, boric acid insufflations should not be used as they retain the secretion.

Antecedents of Mammary Cancer.—Dr. B. Farquhar Curtis of New York said that there are two forms of mammary affections that are of interest either because they arouse in the patient the suspicion of cancer or may precede it. The adenomatous overgrowth in the breast is especially liable to cause discomfort to the patient. Not that there is actual pain, but the patients fear any hardness in the breast. Adenomatous swelling of the breast may cause involvement of the glands. These adenomata may become malignant. Often they are quite hard. As a practical rule Dr. Curtis insists that any of these

tumors that become indurated should be removed. If they occupy less than one-fourth of the breast he removes simply the tumor. Where more than one-fourth would have to be removed in order to cut well wide of the tumor the whole gland should be sacrificed and the axillary glands removed, because these are often found to give pain, and show cancer nodules at times when the breast tumor does not seem to contain them. Adenomata of the breast sometimes seem to disappear of themselves. This form of resolution, however, can not be depended on. Even when the tumor is small, the operator should obtain the patient's consent for the removal of the whole breast, if during the operation there should seem to be any good reason for it. To depend on retraction of the nipple, enlargement of the glands and adhesion of the skin is to invite fatal diffusion of the cancer element before removal. When small tumors are removed they should be submitted to microscopical examination in order to determine if they contain any cancer elements.

Ligation of the Aorta.—Dr. Robert T. Morris of New York said that the aorta has now been ligated some fourteen times. Thus far patients have succumbed, though not immediately. Surely the time is now ripe for successful ligation of the aorta. Of the ten cases done before the days of antiseptics all the patients perished within a short time after the operation. Of the four performed since, Keen's patient lived 48 days, one of the others 29 days. Morris' patient lived for 3 days and then seemed to be doing very well except for a gangrenous condition of the intestines which caused death. Dr. Morris' patient was a young woman of twenty-four years, who developed aneurism of the abdominal aorta. Owing to the pain the condition was considered at one hospital to be a pleuro-pneumonia, and at another an acute gastritis. As the aneurism grew larger the diagnosis became easy because of the immense expansile heaving motions of the abdomen. The aorta was ligated two inches below the aneurism, by a temporary ligature. After twenty hours clotting took place in the aneurism, twenty-seven hours after its fixation the ligature on the aorta was removed. The patient at once began to feel better and asked for food. The pulsation in the femoral arteries which had been completely stopped began again and continued normally. Unfortunately the patient died on the third day from gangrene of the intestines.

MEDICAL PROGRESS.

Removal of Tonsils.—There is a great difference of opinion in regard to the indications which demand amygdalotomy for the results, especially in the adult, are frequently not all satisfactory. R. LEVY (*N. Y. Med. Jour.*, Oct. 12, 1901) believes that where there is simple hypertrophy or a diseased condition of the follicles without hypertrophy nothing short of com-

plete removal will assure complete cure, and that this should always be done. The best method in adults is by the glavano-caustic snare, for, by this means, secondary hemorrhage is very unlikely. Complete dissection is sometimes necessary and this may be done by the galvanocautic electrodes. Simple amygdalotomy is usually sufficient and has many advantages in children.

Respiratory Failure in the Newly-Born.

Two cases of this kind reported by IRVING M. SNOW (*Archives of Pediatrics*, Oct., 1901) showed intense exaggeration of the anal and pharyngeal reflexes, frequent convulsions which seemed closely associated with the respiratory pause, and frequent stoppage of respiration with intense cyanosis and no spontaneous effort at natural breathing. Life was sustained in one case by oxygen and artificial respiration, and if the latter were suspended, in from five to fifteen minutes the breathing became superficial, and finally stopped. Whisky and chloral had been given hypodermically, as the spasms were frequent. The condition of exhaustion and malnutrition being extreme, a soft catheter was introduced into the stomach and two drams of breast milk injected with good effect. The acute symptoms when life was sustained by artificial respiration and oxygen lasted 19 hours, and the child was all right again twenty-six hours after the onset. The other child died after the apnea and opisthotonus had lasted fourteen and a half hours. The writer believes that the attacks were due to pressure on the medulla, the rapid clearing up in one indicating congestion, or slight edema. The success in one case shows the value of persistence in treatment for many hours.

Tincture of Iodine in Acute Amygdalitis.

The intense pain and swelling which accompanies acute amygdalitis frequently baffles the skill of the physician. S. FLOERSHEIM (*N. Y. Med. Jour.*, Oct. 5, 1901) has found after a wide experience that astonishing results may frequently be had by the direct application of the tincture of iodine. A camels'-hair brush is saturated with iodine and rapidly brushed over the inflamed area. The burning is intense, but if it should persist after two minutes a gargle of warm water will give relief. The pain is usually temporary and a second application should then be made in about three or four minutes after the first application. The results are usually marvelous. When the drug has been applied early an apparently intense amygdalitis may be seemingly aborted. In suppurating cases, the pain and swelling are much relieved by this mode of treatment and the rupture of the abscess is apparently hastened.

Insomnia in Children.

R̄ Urethan 1.5 (gr. xxiv)
Glycerin 4.0 (ʒi)
Aq. menth. pip. ad .. 30.0 (ʒi)

M. Sig: One teaspoonful three times during the day (for a child 5 to 10 years old).—FREYBERGER.